



GROWING SOUTH DAKOTA

A MAGAZINE BY SOUTH DAKOTA STATE UNIVERSITY
COLLEGE OF AGRICULTURE & BIOLOGICAL SCIENCES / WINTER 2018



Training Future Leaders
in Precision Agriculture



Meeting Grand Challenges

Today's graduates are prepared to make an impact. They enter careers designed to sustainably grow food to feed a growing global population, use technology to care for our natural resources, provide healthcare for an aging populace and power the world's expanding industries with clean energy. The College of Agriculture and Biological Sciences prepares our students to meet these **Grand Challenges** – within our region and globally. We have the faculty in place and are modernizing our facilities to engage the best and brightest minds.

As you enjoy this issue of *Growing South Dakota* you'll learn more about the college's role in meeting these **Grand Challenges**. Let me share a few recent accomplishments with you here.

DON MARSHALL
Interim Dean



1 Building a Future

Thanks to stakeholders with vision, the College has opened multiple new educational and research facilities, such as our Plant Science Research Support Facility. We held a grand opening and ribbon cutting on August 31, 2017. Read more on page 10.

2 Human Biology

NEW undergraduate and graduate degrees prepare students for human healthcare careers with focuses on the study of human life: evolution, structure, function, information flow, pathways and biological systems. Read about the new Human Biology major on page 29.

3 Nature Calling

The Department of Natural Resource Management recently introduced two new majors; Conservation Planning and Park Management, and Natural Resource Law Enforcement. Read more on pages 24 and 25.

4 Precision Ag

The first four-year Precision Agriculture major in the nation was introduced at SDSU in 2016. Read more on page 6.

5 Record Enrollment

More than 2,615 undergraduates are being educated in our College during the 2017-2018 academic year. 301 graduate students call the College of Agriculture and Biological Sciences home. Read more on pages 4 and 5.

GROWING SOUTH DAKOTA

**Interim Dean, College of Agriculture
and Biological Sciences:**
Don Marshall

**Interim Associate Dean of Research and
Interim Director of South Dakota Agricultural
Experiment Station:**
Bill Gibbons

**Interim Associate Dean of Academic Programs
and Dairy and Food Science Department
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<< **On the Cover:** SDSU offers the first four-year degree in Precision Agriculture in the U.S. Agricultural and Biosystems Engineering Assistant Professor Aaron Franzen, left, instructs a class about using drones to more precisely measure agronomic crops. Read more about the Precision Agriculture major on page 6. Photo by Greg Latza.



Interim Dean **Don Marshall** is Serving the Future Through the Land Grant Mission

IT'S AN EXCITING TIME TO LEAD South Dakota State University's College of Agriculture and Biological Sciences and Interim Dean Don Marshall brings a wealth of experience to the Dean's chair.

"We're at record enrollment – which means many students see value in what this college has to offer them for their future," Marshall says of the more than 2,600 undergraduate and nearly 300 graduate students pursuing degrees within the College of Agriculture and Biological Sciences as of the Fall 2017 semester. "The students' enthusiasm for and interest in learning make what I do rewarding. They really are our future."

Although it's been nearly 40 years since he was pursuing an undergraduate degree at a land grant university much like SDSU, Marshall can relate to the students he serves. He obtained his bachelor's degree at the University of Missouri-Columbia in Animal Husbandry before earning a master's degree in Animal Science and Ph.D. in Animal Breeding and Genetics, both at Oklahoma State University.

"I've always had a passion for agriculture and biological sciences. From an early age I knew education was key to my future, whether I was going to return to my family's farm and feed business or pursue another avenue," he explains.

Today, serving as Interim Dean for the second time in his career, Marshall's optimism for land-grant education and its role in meeting society's grand challenges remains strong.

"When we talk about producing food for a growing global population, healthcare for an aging population, producing alternative forms of clean energy – and doing all this while still protecting our natural resources and outdoor recreational opportunities – really, our college addresses all of this through our teaching, research, and extension programs. We prepare our graduates to meet all these challenges," Marshall says.

Marshall took over as Interim Dean in July 2017 when Daniel Scholl accepted the role of Vice President for Research and Economic Development for SDSU. Scholl had been serving as Interim Dean following Barry Dunn's transition to SDSU President in May 2016.

30-PLUS YEARS SERVING SDSU

Throughout his career, Marshall says he's been fortunate to work in all three areas of the land-grant mission – teaching, research and extension.

"I continue to enjoy the opportunity to work with a wide variety of stakeholders through the land-grant mission; outstanding students, faculty, staff and the many external stakeholders we serve."

It was Marshall's interest in agriculture and belief in the land-grant mission that first brought him from his home state of Missouri to South Dakota in 1984 to work for SDSU Extension serving western South Dakota cattle producers in the role of Extension Beef Cattle Specialist, located in Rapid City. A few years later, he made the move to Brookings when he accepted a teaching and research position in the Animal

Science Department on campus. He eventually assumed the role of Animal Science Department curriculum coordinator.

Marshall became the Associate Dean and Director of Academic Programs for the College of Agriculture and Biological Sciences in 2002. He continued in that position while serving double duty as Interim Dean for the College of Agriculture and Biological Sciences prior to Dunn's arrival in 2010. He also doubled as Department of Animal Science Interim Department Head for six months in 2012 during the search process that resulted in the hiring of current Department Head Joe Cassady. Marshall has continued as Associate Dean and Director of Academic Programs up to the time he accepted the Interim Dean role.

"Teaching is one of my passions. I found that I enjoyed learning from students as much as I enjoyed teaching them," says Marshall, who has spent 31 years providing learning opportunities for SDSU students and valued leadership throughout the College.

Marshall's passion for teaching and learning has been recognized by Ag-Bio students as the SDSU Student Association Teacher of the Year and by faculty with the Gamma Sigma Delta Award for Excellence in Teaching. He has received both university-wide teaching awards offered by SDSU – the Larson Foundation Award for Excellence in Teaching and the F.O. Butler Foundation Award for Excellence in Teaching.

By Lura Roti

John Killefer Named Dean of the College of Agriculture and Biological Sciences



John Killefer, professor and department head of animal and rangeland sciences at Oregon State University, has been named the South Dakota Corn Utilization Council endowed dean of the College of Agriculture and Biological Sciences at South Dakota State University. Killefer was selected following a national search.

"Dr. Killefer's leadership style and professional experiences separated him during this process as attributes that will have a tremendous impact

on the College of Agriculture and Biological Sciences," said Dennis Hedge, provost and vice president for academic affairs. "He articulated the type of vision that will allow the college to continue to excel and move into the future in a way that will allow students, faculty and staff to have a greater impact on the state, the region and the world. We are excited to have John become our next dean."

Killefer has served in his current role since 2012. During that time, he successfully merged the departments of animal sciences and rangeland, ecology and management to form the Department of Animal and Rangeland Sciences. Killefer also completed construction on three facilities and numerous renovations to other facilities. He established approximately \$3.5 million in endowments to support teaching and research, in addition to support for livestock farms and educational opportunities in cattle production.

"I am honored to join such an incredible community of students, faculty, staff, alumni and stakeholders that make up the South Dakota State University family. The College of Agriculture and Biological Sciences embodies the land-grant mission dedicated to exceptional education, research and outreach efforts that are accessible to all. Strong support from alumni, commodity organizations, members of the South Dakota Legislature and stakeholders from across the entire state and region is evident. I am excited to build upon the outstanding foundation that has been established and I am eager to develop relationships with our alumni, state and industry organizations, stakeholders, colleagues, students and other supporters as we move the college forward."

An accomplished researcher, Killefer's programs have secured more than \$6.3 million from both federal and industry sources where his research focused on high-quality production animals and meat products. Killefer was inducted into the Oregon Beef Council Hall of Fame in 2014 and served as a fellow from 2013-15 for the Food Systems Leadership Institute, a national organization dedicated to developing individual and institutional leadership for a 21st century food system.

Killefer went to OSU in 2011 after nearly 10 years at the University of Illinois at Urbana-Champaign where he was an associate professor and later professor. He was an assistant professor and associate professor at West Virginia from 1994-2002. Killefer earned his bachelor's degree in biological sciences at Hastings College in Nebraska. He earned his Ph.D. in animal science with an emphasis in growth and development at Oregon State.

Killefer will begin his duties in March 2018.

Vikram Mistry Serving Double Duty as Interim Associate Dean of Academic Programs



Vikram Mistry is serving as Interim Associate Dean of Academic Programs for the SDSU College of Agriculture and Biological Sciences. Mistry is filling this role following the appointment of Don Marshall as Interim Dean of the College.

A 30-year SDSU employee, Mistry is the Head of the Department of Dairy and Food Science. He completed his master's and Ph.D. degrees at Cornell University, focusing on Food Science. His bachelor's degree

in Dairy Technology is from Gujarat Agricultural University, Anand, India.

Mistry has received numerous honors and awards during his career, including the Harold Bailey Award for Excellence

in Departmental Leadership in 2011, the Kraft Foods Teaching Award of the American Dairy Science Association, and the International Dairy Foods Association Research Award of the American Dairy Science Association, both in 2004, and the SDSU F.O. Butler Research Award in 2003.

Mistry is well-respected by his students. 2017 Dairy Production graduate Brandon Hawkins was quoted in the Department's 2017 Dairy Digest publication, speaking about Mistry, "He is one of the most down-to-earth, involved department heads around. He knows everyone by name, and their life stories coming into college, and helps to mold and continue that life story throughout college and beyond."

In addition to maintaining his duties as the Head of the Department of Dairy and Food Science, Mistry is helping faculty from the eight academic departments in the College of Agriculture and Biological Sciences in addition to assisting the 2,615 undergraduate students in the College.

SDSU College of Agriculture and Biological Sciences Academic Programs At A Glance

Majors Offered

- Agricultural and Biosystems Engineering
- Agricultural Education, Communication and Leadership
 - Education Specialization
 - Communication Specialization
 - Leadership Specialization
- Agricultural Business
- Agricultural and Resource Economics
- Agricultural Science
 - Two-year AS Degree
 - Four-year BS Degree
- Agricultural Systems Technology
- Agronomy
- Animal Science
 - Industry Specialization
 - Science Specialization
- Biology
 - Biology Secondary Education
- Biotechnology
- Dairy Manufacturing
 - Microbiology Specialization
- Dairy Production
- Conservation Planning and Park Management



Agricultural and Biosystems Engineering

Department Head: Dr. Van Kelley

- Ecology and Environmental Science
- Food Science
- Horticulture
- Human Biology
 - Pre-Chiropractic
 - Pre-Dental
 - Pre-Medicine
 - Pre-Mortuary
- Pre-Optometry
- Pre-Physician Assistant
- Microbiology
- Natural Resource Law Enforcement
- Precision Agriculture
- Rangeland Ecology and Management
- Wildlife and Fisheries Sciences
- Pre-Veterinary Medicine



Agronomy, Horticulture and Plant Science

Department Head: Dr. David Wright



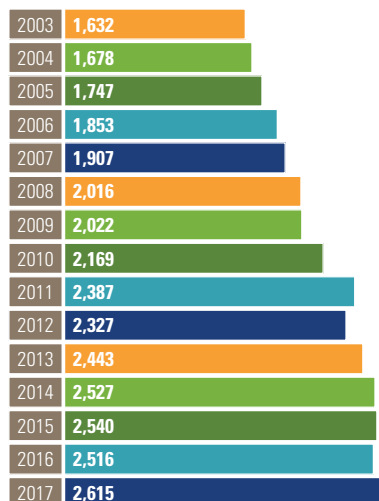
Animal Science

Department Head: Dr. Joseph Cassidy

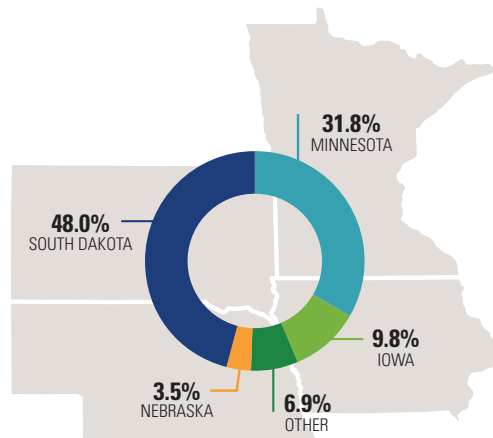


Biology and Microbiology
Department Head: Dr. Volker Brozel

Enrollment: Academic Programs growth for the past 15 years



2017-18 ABS Undergraduates:
Where are they from?



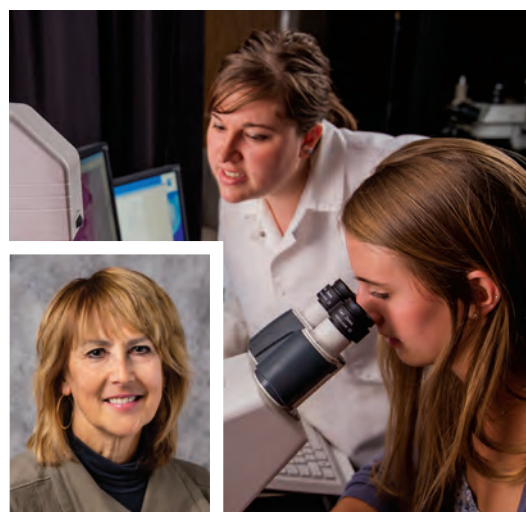
Dairy and Food Science
Department Head: Dr. Vikram Mistry



Economics
Department Head: Dr. Eluned Jones



Natural Resource Management
Department Head: Dr. Michele Dudash



Veterinary and Biomedical Sciences
Department Head: Dr. Jane Christopher-Hennings

First of Its Kind

SDSU'S NEW **PRECISION AGRICULTURE MAJOR**

Students integrate data management, engineering and agronomic concepts to help optimize production on each acre for economic and environmental stability



Our Students:

- Practice hands-on learning with precision ag equipment
- Gain real-world experience working in our teaching and research facilities and on research farms
- Learn on eight Kubota UTVs equipped with Raven guidance systems
- Hone skills in our state-of-the-art computer lab featuring GIS mapping software

THE NEW PRECISION AGRICULTURE MAJOR AT South Dakota State University has gained significant attention from the agricultural industry.

Introduced to students during the Fall 2016 semester, SDSU is the only university in the country to offer a four-year degree in precision agriculture. Precision agriculture is a management approach utilizing cutting-edge technology to optimize inputs for cost efficiency, yields and improved soil health.

"Our students are learning how to manage data to make better decisions about how each acre of land should be used, not only for optimal crop yields, but also to improve livestock production and conservation practices, too," says Don Marshall, Interim Dean of the College of Agriculture and Biological Sciences.

The major provides students with training from the Agronomy, Horticulture and Plant Science Department and the Agriculture and Biosystems Engineering Department, with additional classes from the Jerome J. Lohr College of Engineering.

"Over about the past 10 years, there have been several classes tied to precision agriculture offered on campus and student interest in the classes was growing," says Van Kelley, Agriculture and Biosystems Engineering Department Head.

As a result, several department heads on campus gathered together to discuss what the precision agriculture program parameters would be. They saw the rapid onset of technology being developed to assist farmers and their ability to be even better stewards of the land and resources, while at the same time increasing yields.

Department heads were also influenced by requests from industry professionals looking for technologically proficient graduates.

The new precision agriculture program was a motivating factor that led John Stubbendick to attend SDSU. The junior precision agriculture major from Avoca, Nebraska, believes the major provides students with the tools to keep up with industry needs.

"The industry is very interested and involved in the program and our classes, so I am very optimistic about what the major has to offer and the employment opportunities in the future," Stubbendick says.

The new precision agriculture degree keeps students at the cutting edge of the rapidly evolving intersection of agronomics, high-speed sensor technology, data management and advanced machinery development. Students graduate with technical and



RAVEN DONATES DRONES TO SDSU

Raven Industries donated three AgEagle RX60 drones to South Dakota State University this fall. The fixed-wing drones will be used by the departments of Agronomy, Horticulture and Plant science, Geography, and Agricultural and Biosystems Engineering. Shane Swedlund, an engineering manager for Raven Applied Technology, delivered the drones. In all, Raven has donated four fixed-wing drones for use at South Dakota State. "Raven is pleased to be a long-time partner with SDSU and is committed to support the advancement of precision agriculture education and practices," Swedlund said.

*Matt Schmidt,
SDSU Marketing and Communications*

Pictured above: From left, Don Marshall, the interim dean for the College of Agriculture and Biological Sciences; Peter Kovacs, an assistant professor of precision agriculture crop systems; Van Kelley, department head for agricultural and biosystems engineering; and David Wright, department head for agronomy, horticulture and plant science; accept the donation from Shane Swedlund, an engineering manager for Raven Applied Technology, center.



The challenge is clear.

Feed more people using fewer resources in a manner that is socially acceptable and economically and environmentally sustainable.



Pictured above: Precision Agriculture Instructor Nicolas Uilk, right, talks about precision application with students, from left, Kyla Mauk, Sam Johnson, Kelbi Dean and Madison Schafer

management skills, and will be prepared for lifelong careers that support economically and environmentally sustainable agriculture.

“Creating a minor in 2015 was the first step, but we felt like there needed to be more,” explains David Wright, Agronomy, Horticulture and Plant Science Department Head.

SDSU Vice President of Research and Economic Development Daniel Scholl says the major in precision agriculture is motivated by SDSU’s vision of inspiring the next generation of precision agriculture innovators and leaders.

“Employers need, and are demanding graduates capable of leading decades of innovation in the rapidly advancing area of precision farming,” Scholl relates. “SDSU’s mandate as a land-grant university is to respond to changing needs with the degree offerings that will promote graduates’ abilities to take their roles as leaders in the economy.”

INDUSTRY-DRIVEN

The addition of the precision agriculture major was encouraged by industry leaders who became engaged in the development process and have remained involved.

“Prior to this major, students have been educated in specifics in engineering and agronomy, but we wanted to marry these to provide a more rounded skill set,” Kelley says.

Faculty are continually working with the industry to modify curriculum to include precision agriculture techniques. The new courses provide knowledge in areas such as using sensors and geospatial statistics.

To help offer the best technology and education to students, the program has partnered with companies like Raven Industries, John Deere Precision Planting, Kinsey Ag Services and the Climate Corporation. These companies make frequent visits to campus and remain in close contact with faculty to provide insight, donate technology and serve as mentors to students.

“Since the onset of the program, there has been a lot of industry interaction; we are implementing more industry-related projects to provide companies with opportunities to interact with students,” explains Nicholas Uilk, precision agriculture instructor.

Shane Swedlund, Facility and Engineering Manager for Raven Industries at the SDSU Research Park, notes that partnering with the SDSU precision agriculture program made a lot of sense because a great deal of what Raven does is focused on precision agriculture and they can work with students on projects.

UNITED FRONT

Working to connect precision agriculture majors with industry leaders, students have been attending the National Farm Machinery Show in Louisville, Kentucky, for several years.

SDSU is planning a new Precision Agriculture Education and Research facility that will house faculty from the Agricultural and Biosystems Engineering Department and Agronomy, Horticulture and Plant Science Department in one building while also providing spaces for increased student interaction.

The goal of the facility is to provide better learning opportunities for the students and better facilities for research.

For example, in engineering classes students would work with programs to develop new sensors and then in the agronomy classes students test the sensors and make sure they provide the needed efficiency for farmers.

Marshall says the vision is to inspire the next generation of precision agriculture innovators and leaders with high-quality classroom experiences and hands-on learning opportunities. “Our students are putting knowledge and theory to use through relevant, experiential agricultural learning projects and have a competitive advantage as they enter the workforce, he states.

Ultimately, SDSU’s precision agriculture program benefits both food producers and consumers. “As farmers are provided with better technology, they can produce more food, more efficiently and sustainably,” Wright concludes.

Learn more about the SDSU Precision Agriculture Program at <https://www.sdstate.edu/programs/undergraduate/precision-agriculture-bs> or email sdsu.academic.programs@sdstate.edu, call 605-688-5133.

By Sydney Sleep

Raven announces historic \$5 million gift to South Dakota State University

Supporting global leadership in precision agriculture

Photo by University Marketing and Communications



Pictured: "This generous gift by Raven will help transform the state of South Dakota into a global leader within an expanding precision agriculture industry," SD State President Barry Dunn said.

RAVEN INDUSTRIES gave South Dakota State University a historic gift of \$5 million to build its Precision Agriculture Facility within the College of Agriculture and Biological Sciences on its campus in Brookings.

SDSU is the first land-grant university in the country to offer both a four-year degree and a minor in precision agriculture. The Precision Agriculture Facility will be the nexus for innovation and collaboration across several disciplines, including engineering, agronomy, horticulture, mathematics and the decision sciences.

Dan Rykhus, president and CEO of Raven Industries, said the company recognizes this unique opportunity to partner with SDSU. "SDSU is leading the way in developing the next generation of precision agriculture innovators with an enriching, multidisciplinary education and a robust learning experience. Raven and

SDSU have enjoyed a long and positive relationship, and this facility will lead to further collaboration on emerging technology."

Precision agriculture combines agronomic practices with farm machinery technology and actionable data. As the world population continues to increase, the demand for ag technology that promotes environmental stewardship – allowing farmers to grow more with less – is rising.

"Our investment in this partnership reflects our strong belief that the demand for precision ag technology and solutions is rapidly growing across the globe," Rykhus continued.

"This generous gift by Raven will help transform the state of South Dakota into a global leader within an expanding precision agriculture industry," SDSU President Barry Dunn said. "The facility will enhance innovation and educational

programs that will deliver applications to enable data-driven decisions in precision farming, ranching and conservation. It will promote the collaboration between faculty, students and industry experts that will change agriculture and make our region and world a better place. Together, Raven and South Dakota State University are working to build a strong future and precision agriculture is that future."

Raven and SDSU believe this will put South Dakota in the forefront as it leads the nation in precision agriculture education, research and extension. From state and economic benefits to the development of a highly trained workforce, South Dakota will benefit from precision agriculture technology and adoption.

Supporters of the project will seek legislative authority during the 2018 session to start construction of the Precision Agriculture Facility.

SDSU Opens New Plant Science Research Support Facility

Collaborative effort provides new space for spring and winter wheat, oat and forage breeding programs

VITAL AGRICULTURAL RESEARCH TOOK AN important step into the future at the ribbon cutting for the South Dakota State University Plant Science Research Support Facility on the SDSU campus at Brookings on Aug. 31, 2017.

"This building has unique functionality that will impact those in the 22nd Century," Bill Gibbons, Interim Associate Director of the South Dakota Agricultural Experiment Station and Interim Associate Dean for Research, said. "The state-of-the-art, \$4 million structure received funding through SDSU, \$1.1 million from the SDSU Foundation Seed Stocks Division and \$500,000 from the South Dakota Crop Improvement Association."

Gibbons explained the current facilities date to the mid-1940s. The development of many varieties of crops has had a dramatic impact on South Dakota over the years. New varieties develop as weeds and pests continue to evolve and adapt to stay one step ahead. Not all of the work is directed at disease. A second consideration focuses on the consumer demand for better nutritional quality and for improved yields.

SDSU President Barry Dunn highlighted the positive impacts the facility will have on South Dakota farmers for decades into the future. The research and technology will seek to solve complex problems as producers strive to feed a hungry world.

"Looking around the room, it's clear to see that success has many parents," Dunn said. "It comes from hard work and collaborative effort. Over the last century, there have been major accomplishments in crop breeding, which is impactful across South Dakota, the nation and the entire world. Our faculty and staff are leaders in plant breeding, genomics and production. This state-of-the-art workspace provides for new discoveries and developing

new technologies. It has dedicated space for our spring and winter wheat, forage and oat breeding programs which are targeted for South Dakota and the northern Great Plains. It will not only improve South Dakota agriculture, but the structure was designed to keep employees safe."

From the workforce development standpoint, both undergraduates and graduate students will fine-tune skills needed for job opportunities for seed research and variety development.

RESEARCH MAKES A DIFFERENCE

Gov. Dennis Daugaard reflected on those involved in agriculture in the state, noting that agriculture is constantly challenged by prices and the weather. During times like these, finding the extra margin can make the difference between success and failure. Nuggets of information provided by SDSU research can make an economic difference.

"This facility provides for advancements in research for forages, oats, winter wheat and spring wheat. Whether it focuses on increasing yields or finding genetic traits to resist disease or pests, it makes us better and better at what we do in ag," Daugaard said. "The facility is not only cultivating new species but cultivating new leaders in ag." He continued, "Young people learn best when a classroom experience or what they read in a book is reinforced by a hands-on opportunity to work with the plants, to see the growth and to embed that knowledge. It's a great day for SDSU and a great day for agriculture."

Gibbons explained the flow of seed technology through the system. The SDSU researchers test varieties and develop new ones. Once the seed is successful, it goes to the Foundation Seed Stock





Division to be propagated by a network of growers. Then it goes to the South Dakota Crop Improvement Association, where it is further increased by a network of farmers to create seed that can be sold to producers.

"It takes teamwork and effort to start with one or two seeds until it gets to the point where truckloads of seed can be commercialized," Gibbons said. "It's a dynamic partnership."

The South Dakota Crop Improvement Association formed 92 years ago to promote the interests of South Dakota ag producers. As chairman of the board, Bryan



Pictured bottom left: Cutting the ribbon to open the new facility are, from left, SDSU Agronomy, Horticulture and Plant Science Department Head David Wright, South Dakota Foundation Seed Stocks Board Member Laird Larson, South Dakota Crop Improvement Association President Bryan Jorgensen, South Dakota Governor Dennis Daugaard, SDSU President Barry H. Dunn, SDSU Agronomy, Horticulture and Plant Science Graduate Student Lance Merrick, SDSU Vice President of Research and Economic Development Daniel Scholl, College of Agriculture and Biological Sciences Interim Dean Don Marshall, SDSU Crop Performance Testing Director Jonathan Kleinjan, South Dakota Agricultural Experiment Station Interim Director Bill Gibbons.





Jorgensen of Ideal praised the work that benefits South Dakota producers and the industry.

"As a farmer, I thank you for all you do. Neal Foster has done a tremendous job for the South Dakota Crop Improvement Association in leading and growing the program. He's done amazing things with the dollars generated from the royalties we collect."

Jorgensen recognized Laird Larson of Clark, a past board member who worked to get

the SDSU Seed Technology Building built and also led the charge for this project.

SDSU plays a large role in the development of seed varieties and ensuring a quality product. Jorgensen said the Economist magazine says since 1947, agriculture production has increased 16-fold. With the ability to produce more food, agriculture more than doubles what the manufacturing industry has done.

"It's an amazing feat and it came about because of land grant institutions such as SDSU," Jorgensen said. "There are high demands for new varieties with an emphasis on accruing and securing high standards of purity in germplasm. This work requires a modern facility and this will move SDSU forward 70 years and be important for decades more to this state's producers in partnership with SDSU."

"This is just a part of a bigger initiative to bring this industry into the 21st century," Jorgensen said. "Following the modernization of the greenhouse and headhouse, we continue with planning and funding for a precision ag building that will replace structures from the post-World War 2 era."

Producers in South Dakota have a voice through the South Dakota Crop Improvement Association and the plant breeders to better meet the needs of the future.

"As chair, I speak for rest of board, as an organization we are proud to play a role in the completion of this facility," he said. "We have high expectations for better varieties and more research to meet the needs for generations to come."

About 200 people attended the ribbon-cutting and many toured the building. Although staff and equipment had not moved into the facility, those in charge of the areas shared how the space will be utilized for their projects.

According to assistant professor Sunish Sehgal, South Dakota Agricultural Experiment Station winter wheat breeder, the new space will be a great addition to the winter wheat program.

As she stood in the new space allocated to her program, SDSU oat breeder Melanie Caffé-Trembl said her research seeks to increase the quality of locally grown oats. She and her colleagues work to improve the nutritional and milling quality of new oat varieties.

Ag producer Jim Kopriva of Raymond was impressed with the facility. "This will give students a chance to learn how to condition grain which is really needed," he said.

"True success comes from many hands working together," Dunn said. "This addition will help farmers to compete in the competitive market and lead SDSU into the future."

By Connie Groop, agricultural journalist from Frederick, SD.

ABOUT THE NEW PLANT SCIENCE RESEARCH SUPPORT FACILITY

Due to an expansion in the Agronomy, Horticulture and Plant Science Department at South Dakota State University, SDSU officials recognized a significant need for more modern seed processing and storage facilities. Keeping the vision of SDSU President Barry Dunn in mind, the new SDSU Plant Science Research Support Facility, officially opened August 31, 2017, will allow for an increase in research and hands-on learning opportunities for students at South Dakota State University.

"This building provides modern space for our wheat, oat and forage breeders, to enhance their ability to release competitive varieties, targeted for South Dakota farmers," said Dr. David Wright, head of the Department of Agronomy, Horticulture

and Plant Science.

"SDSU wheat and oat varieties are grown and tested globally. Those programs access new germplasm from around the world and this germplasm is used to strengthen the agronomic and yield performance that producers enjoy."

Wright said the original seed house was built in 1947. The design of the new building encompasses modern work and office space, keeping employee safety top of mind. It provides much-needed expanded space for plant breeding research, which coupled with current research labs, will allow the release of novel crop varieties for production in the region.

The 17,000 sq.-foot facility includes refrigerated units for long-term storage of germplasm and pure seed stock; project workrooms for processing, handling, sorting, and storage of seed stock to be used for research projects; grinding areas for separation of the seed from chaff; drying rooms, and a drive-through unloading alley which can accommodate small combines unloading grain and research material in a secure environment.

DYNAMIC GRADUATE TAPS INTO TECHNICAL TRAINING BEFORE EARNING DEGREE AT SOUTH DAKOTA STATE UNIVERSITY

Articulation agreements give students education options



A SOLID BACKGROUND IN her chosen field and exceptional leadership add to Tara Parmely's Agronomy degree as she celebrated her Spring 2017 graduation from South Dakota State University. Parmely grew up on a grain farm near Miller, S.D., and her experiences on her family's farm fueled the desire to earn her degree at SDSU.

Parmely's passion revolves around agriculture. She recently

took a job with North Central Farmers Elevator in Miller as a sales agronomist. To get to that position, she built a strong agronomic foundation through education, leadership experiences and work.

FROM TECH SCHOOL TO UNIVERSITY

After high school, Parmely learned technical aspects of the industry at Lake Area Technical Institute (LATI) in Watertown. Once she'd completed her Associate's Degree in Ag Business, she wanted to enhance her knowledge by pursuing classes at SDSU and a Bachelor's degree in Agronomy with a minor in Ag Marketing.

The process was made easier because of the articulation agreement between the two schools. Parmely said it was a user-friendly process. Staff members Laurie Johnson at LATI and Mary Christensen at SDSU were helpful in working through the paperwork. They also served as mentors, helping her through the process and transition.

Parmely said classes at Lake Area covered most of her 100- and 200- level requirements for SDSU. It took three years for her to get her Bachelor of Science degree as she added a Marketing minor to the agronomy classes.

"When Tara came to LATI, she knew she needed a degree past high school, but was not confident in going to a university," Laurie Johnson, ag instructor at LATI said. "The articulation agreement is in place to help our students continue on with their education. We are seeing more of them do that. Tara is a shining example of not only leadership, but the drive to succeed in her dreams of getting an agronomy degree! We at LATI work hard to prepare our students who choose to continue their education at SDSU."

Echoing praise for Parmely, Mary Christensen, SDSU College of Agriculture and Biological Sciences Coordinator of Advising & Student Retention said, "It was a delight to work with Tara. She took the initiative to plan for her future. Her motivation to dive deeper with academics and to apply course content in a professional setting was evident even as a prospective student."

There has been an uptick in the number of students using the articulation agreements, according to Don Marshall, Interim Dean of the College of Agriculture and Biological Sciences.

Agreements between South Dakota State University and technical schools have been in place for several years. Marshall said Tara was one of eight students from LATI using the program during the 2016-2017 academic year. There were four from Mitchell Technical Institute. These numbers only reflect the students in the College of Agriculture and Biological Sciences programs. Other areas of the university also use the agreements.

"There are a lot of reasons that some students go to technical institutes," Marshall said. "This program allows them to use credits they earned to apply to their four-year degree at SDSU. These agreements are only valid if students complete their associate degree at one of the technical schools. The agreements apply to specific programs and to a specific major. Of the students from Lake Area, five are majoring in Agricultural Sciences, two are in Agronomy, and one is in Ecology and Environmental Sciences. The Mitchell students are in Agricultural Sciences."

If the agreements were not in place, many of the technical classes would not transfer to the University. The articulation program allows students to shorten up the time spent on campus when pursuing their degree.

"It was a delight to have Tara on campus," Marshall said. "She's taken on leadership roles, is very competent, and fun to work with. Tara is well prepared for a successful career."

CLASSWORK AND FIELDWORK

Classes featuring the technical aspects of dealing with weeds and fertilizers intrigued Parmely.

"I learned how in-depth the agronomy field can be at SDSU," she said. "The classes provide a perspective I didn't have. I want to make sure plants are healthy and I want to know how to handle weeds. Taking classes at SDSU enhanced my understanding of the industry."

For one class, her group went to the SDSU Opportunities farm near Lennox to work on a project.

"Our group looked at soil-water infiltration," Parmely explained. "Our assigned fields had three different residues: rye stubble, rye stubble that had been disked and corn stalks. Essential key study information was presented to the farm manager who will use it to improve future farming practices."

"It was a real hands-on experience," she said. "We collected data, made presentations and provided recommendations based on what we learned."

Four internships got Parmely's feet in the trenches. Working with an ag retailer, she learned the cycle of business. She worked for Crop Production Services at Northville where she was also in charge of seeding the Innovative Demonstration Plots. One season, she seeded 30 to 40 test plots of corn and soybeans in several locations in Minnesota and South Dakota with different application criteria.



Parmely followed that up scouting fields and checking on the progress of the test plots around Northville.

At Watertown, she worked for a biological company doing lab and grow-room trials, prepping plant data, doing root scans and working in the lab on soybean cyst nematodes. She learned to grow them, and then effectively kill them. All of the work has had multiple facets.

TAKING CHARGE

Parmely eagerly stepped into leadership roles at SDSU. She served as vice president of the Ag-Bio Prexy Council. Representatives from every club or organization within the college of Agriculture and Biological Sciences make up the group. The big event for the group focused on organizing Ag Day events on campus in April to celebrate the industry and inform students and staff.

"We impacted a lot of people that day," Parmely said. "Booths all over campus provided information about ag groups and facts about ag. Questions about the parts of a cow were shared. Students could hold a baby chick. We gave out 2,200 T-shirts. Our evening speaker brought in 400 people. It was a lot of fun. Many on campus who are removed from agriculture learned about the impact agriculture has on their lives. Even though SDSU is a land grant university, not everyone attending SDSU has an ag background."

Johnson said she was great leader while at LATI, where Parmely was an Ag Ambassador for the department. At LATI she volunteered many hours to help the Watertown Area FFA Chapter be successful. FFA members learned as much from her as she did from them.

In transferring to SDSU, Christensen said Parmely stepped up as a student leader as soon as she was on the Brookings campus. "Sometimes it is hard for transfer students to get involved right away, but she stood out and made a name for herself in a short time frame. She is a team player and works hard. Tara cares about others and shows that through her communication skills and team spirit. I'm proud of her and glad to call Tara a friend."

SHARING KNOWLEDGE

In looking at potential jobs, Parmely said, "Customer interaction is important because I like to talk to people. I found out my strengths fit with being a sales agronomist. I want to be a part of the community, doing something with ag," Parmely said. "I just can't turn that off, I will find something to continue to fill leadership roles."

SDSU HOSTS REGIONAL MEETING FOR AGRONOMY, SOIL AND ENVIRONMENTAL SCIENCE

Tara Parmely had a hand in organizing the Spring 2017 regional agronomy meeting for Students of Agronomy, Soil and Environmental Sciences (SASES) on the SDSU campus. The conference brings together agronomy students to develop professional skills, network and learn about current issues in agriculture.

More than 200 students came to SDSU from across the Midwest, from Texas to Colorado, and from Ohio to Michigan and North Dakota to hear speakers from the industry, including SDSU faculty. Parmely attended similar events in Madison, WI and Lubbock, TX.

Parmely served as the chairman of the SASES annual meeting planning committee to plan and organize the event. While on the SDSU campus, attendees were able to take tours both on-campus and around the region. The SDSU Agronomy Club hosted meal functions, an ag Olympics, speakers and the conference program.

Representatives from each attending university also participated in a community service project by planting trees around the perimeter of the new SDSU Local Foods Education Center.

Summing up the planning and hosting experience, Parmely said, "It was a great and fun event, and an honor to be the host university. Participants talked about having a great time while attending, and I believe everyone walked away having learned a couple of things with new friends. Seeing how all of our planning and work ahead of time came together once the event was here was satisfying."

Classroom instructions along with numerous activities, on and off campus, have widened her network and provide her with many options. As she begins her job as an agronomist, Parmely will continue to lead, no matter where she goes.

To learn more about the list of articulation agreements available through SDSU, go to the admissions website or <https://www.sdstate.edu/search?keys=articulation+agreements> or contact the College of Ag and Biological Sciences at 605-622-5133.

By Connie Groop



SDSU Hosts Record Number of Employers at 2017 Ag-Bio Career Fair

Student attendees and employers focus on job opportunities

SOUTH DAKOTA STATE UNIVERSITY welcomed a record number of employers to its annual Ag-Bio Career Fair on Wednesday, October 4. A total of 141 employers representing a multitude of industries from 10 states were recruiting for both internships and full-time positions. The event was hosted by the SDSU College of Agriculture & Biological Sciences and the Office of Career Development.

More than 900 students attended the largest on-campus fair to explore career opportunities and make connections with potential employers in agriculture and biology fields.

"The Ag-Bio Career Fair is truly a win-win for both students and employers," said Don Marshall, Interim Dean of the College of Agriculture and Biological Sciences.

Marshall added that graduating seniors looking for permanent employment and underclassmen looking for internships are often able to set up formal interviews for the following day or a later time. It is also an excellent way for freshmen and others not yet looking for employment to learn about potential careers related to a given major.

"In terms of personal development, it is a huge step introducing yourself to a stranger and then spending the next few minutes selling yourself to that recruiter," said Matt Tollefson, career coach for the College of Agriculture & Biological Sciences. "Hopefully they offer an interview, but if not it is easy to move on to the next company."

POET was one of the companies looking to hire students at the career fair. Katie Wiseman, Recruitment Business Partner for POET, said the company hires many SDSU students because the curriculum has a reputation for producing talent and there are many students with strong agriculture backgrounds.

"Additionally, we are a South Dakota-based company and want to support the school," Wiseman said.

United Farmers Cooperative Training and Development Manager, Jenny Krohn, said UFC likes to attend the career fair because there is a vast pool of agricultural students from the area.

"The quality of the students from SDSU is excellent," Krohn said.



For the second year, a mobile app was available to students and employers to allow for easy navigation of the career fair. This year the app used was Career Fair Plus, which was upgraded from last year to be more user friendly.

"The app allows students to view all employers at the fair and to see what positions the companies are looking to hire students for," said Samuel Johnson, Ag-Bio Student Coordinator, who helped create the new app.

Premier sponsors for the Ag-Bio Career Fair were: Agropur, Bayer, CHS, DuPont Pioneer, Farmward Cooperative, JBS, Syngenta and Wheat Growers.

The 2018 Ag-Bio Career Fair will be held October 3, 2018.

By Sydney Sleep



Groundbreaking Kicks Off Construction of New South Dakota Animal Disease Research and Diagnostic Laboratory

Stakeholders worked together to upgrade agricultural and public health resources



THE NEW SOUTH DAKOTA ANIMAL DISEASE RESEARCH and Diagnostic Laboratory on the South Dakota State University campus is expected to bring added public health benefits and reinforces South Dakota as a leader in safeguarding animal health with precision diagnostics. The groundbreaking for the new ADRDL took place on August 31 near the existing facility in Brookings.

“Our mission has local to global significance since disease knows no boundaries,” Dr. Jane Christopher Hennings, the head of the SDSU Department of Veterinary and Biomedical Sciences and director of the South Dakota ADRDL said. “This was evident during the highly pathogenic avian influenza outbreak in 2015

when the initial outbreak in the Midwest started in Minnesota and quickly moved to South Dakota.”

Hennings expressed thanks to all of those who shared the vision and support to get things done. She noted that the generosity and drive of the people of South Dakota, especially those in agriculture and veterinary sciences, made the groundbreaking happen. This new facility will insure that the staff will continue to serve the people and animals in this state 24 /7.

“This celebration I believe represents the very best of us in South Dakota as we celebrate the bold vision born a decade ago by Professor Emeritus Dr. David Zeman and a powerful ADRDL board,” SDSU President Barry Dunn said.



In 2012, members and leadership from Ag Unity and the leadership of the College of Agriculture and Biological Sciences met in a series of brainstorming sessions. The result was a white paper called Ag 2020 which became the blueprint for supporting agricultural stakeholders in South Dakota by enhancing the infrastructure of the College of Agriculture and Biological Sciences at SDSU.

The most ambitious part of the plan called for a new Animal Disease Research and Diagnostic Laboratory. That vision became part of a plan, and that plan became a project. Success depended on stakeholders and elected leaders who boldly saw beyond the limits of the present day to an exciting and prosperous future. The staff and faculty of the lab and industry partners and producers shouldered this project and took it to doorsteps of elected leaders and state officials. The inclusion of the project in Gov. Daugaard's budget address for 2017 was a key step. Collaboration brought about the successful passage of legislation, resulting in the current building project.

"It is all due to the power of great people," Dunn said. "It's a game changer for the state of South Dakota, the region and the University."

Dr. Dusty Odekoeven, South Dakota's State Veterinarian and head of the South Dakota Animal Industry Board, said 50 years ago in 1967, the current animal disease lab was built. The support for a new ADRDL marks a renewed investment and renewed commitment to those working to safeguard the animals and people in the state.

The current ADRDL is recognized nationwide as a leader in diagnostic sciences. Changes are needed to continue to serve the needs of clients especially in terms of biosafety.

Rallying the support and getting funding in place took work.

"It didn't get here easily or quickly," Odekoeven said. "Great leaders worked hard to get it done. Dr. David Zeman, who is a past director at the lab, got things started and Dr. Hennings continued the drive. My predecessor, Dr. Sam Holland, impressed on me the need for high quality diagnostics in South Dakota."

Odekoeven recognized many legislative and animal industry leaders for their help. He noted that Ag Unity, a coalition of ag groups with Brenda Forman as their leader, played a big role in efforts behind the scenes. The resulting cooperative effort will work to serve the needs for the state into the future.

Glenn Muller with the South Dakota Pork Producers Council stated he not only represented the state's 900 pork producing families but also those in the beef, dairy, sheep and poultry, and other animal groups as well as agribusinesses dependent on this facility. Because of the efforts of everyone combined, the new facility will become a reality.

Pictured top: SDSU President Barry Dunn. **Middle:** South Dakota Governor Dennis Daugaard. **Bottom:** Dr. Jane Christopher Hennings, head of the SDSU Department of Veterinary and Biomedical Sciences and director of the South Dakota Animal Disease Research and Diagnostic Laboratory



Pictured above: Dr. Eric Nelson (left) and Dr. Jane Christopher Hennings show Dr. Nathan Sanderson and Governor Dennis Daugaard the plans for the new South Dakota Animal Disease Research and Diagnostic Laboratory. **Top right:** Glenn Muller. **Bottom:** Dr. Dustin Odekoeven



“They identified the need and stayed determined to find a mechanism to fund it,” Muller said. “We cannot overstate how important it is to our industry to have this facility. In 2013, porcine epidemic diarrhea virus entered the United States, causing an almost 100 percent death loss in baby pigs born. The ADRDL staff developed a real-time PCR (polymerase chain reaction) test and established a response to the disease. Adding biosecurity level 3 will increase the recognition of the work done here nationwide so it can address foreign animal diseases that may emerge in this country in the future.”

Those in animal agriculture do not overlook the importance of the lab as it goes beyond diagnosing livestock diseases and providing research to manage those diseases, Muller said. The staff provides research to manage the well-being of pets and wildlife as well as monitoring and researching food safety issues.

Gov. Dennis Daugaard congratulated all those at the groundbreaking as the culmination of hard work by many. He recognized those who found the dollars to make it happen.

“It is time to get the lab upgraded for the really important work done in this field,” Daugaard said. “The work provides for critical research and support to protect the citizens and livestock industry in the state from disease outbreaks. The process will begin by replacing old equipment, upgrading infrastructure, accommodating exciting new technology and meeting safety standards.”

When the current laboratory was built, DNA Sequencing did not exist and molecular diagnostics had not yet been developed. This lab conducts more than 200,000 molecular diagnostics tests each year, while DNA Sequencing determines the “fingerprint” of various pathogens, assists in vaccine design and aids in the development of new detection tests – all essential for modern disease control.

The new space will increase federal lab standards for containment at a bio safety level 3. This will allow the staff to provide timely diagnostic services for serious or lethal diseases.

The lab will also be the first with a drive-up window. “If you think about it, if you are worried about spreading a swine or poultry disease, you don’t want to walk into a facility where you might infect some other owners,” Daugaard explained. “As I understand it, the livestock owner would drive up to a window, hand the sample to the staff without worry about infecting others.”

Daugaard continued, “As livestock move farther and farther from where they were born, there is a greater potential for new disease transmissions. It’s not a matter of if there will be a serious disease outbreak; it’s a matter of when. With this new ADRDL lab, those in charge will preserve, promote and protect the South Dakota livestock industry for years to come.”

Construction on the new facility will begin in the spring of 2018, with an expected completion date in 2020.

By Connie Groop



Distinguished Professor Exemplifies Outstanding Talents in Researching Emerging Diseases

Dr. Eric Nelson is known as a mentor, researcher, teacher and leader

THE PIONEERING WORK IN handling emerging diseases along with his leadership role has netted accolades for the 2017 Distinguished Professor in the College of Agriculture and Biological Sciences at South Dakota State University.

Dedicated to his profession, Dr. Eric Nelson, Professor of Veterinary and Biomedical Sciences, is known as a mentor, researcher, teacher and leader. Nelson likes to work in the background to facilitate broader projects and objectives. According to him, he's humbled by the recognition as he's not an "award type person."

In presenting the award, SDSU President Barry Dunn said, "Dr. Nelson, it is with highest honor that I present you with the title of Distinguished Professor. This is the university's ultimate academic recognition presented to those who have reached the pinnacle of their careers through distinguished performance and national or international recognition." Nelson's name will be added to the other 26 Distinguished Professors on a plaque displayed in the lobby of Briggs Library at SDSU.

Since agriculture is the backbone of society, Nelson said his research has typically focused on trying to identify practical solutions to problems in livestock production. The work is critical to the ag industry as he focuses on emerging viral diseases. The U.S. swine industry has faced several significant diseases including the porcine epidemic diarrhea virus (PEDV) outbreak starting in 2013.

Nelson said the South Dakota Animal Disease Research & Diagnostic Laboratory (ADRDL) was on the front lines in responding to the outbreak in the rapid development and implementation of new diagnostic tests to aid in the control of PEDV. This effort was a good example of integrating research, diagnostic service and technology transfer. Several graduate and undergraduate students also gained

valuable "real-world" training through their participation in this work.

"Our group did much of the early characterization of this new virus and had a role developing many diagnostic tools needed for the control of this disease," Nelson said. "More recently, we have focused on some significant emerging diseases of swine, providing new tools for diagnostics and control."

When asked to describe his work, Nelson said, "My real passion is trying to serve others. I think this fits well with my varied roles in the Veterinary and Biomedical Sciences Department and the ADRDL. The ADRDL provides veterinary diagnostic services to monitor animal health or establish causes of animal health problems. This aids veterinarians and health officials in the treatment, control, prevention and surveillance of animal diseases to benefit the livestock industry, animal owners, and public health."

Nelson joined the university in 1988 as an Instructor in the Veterinary Science Department and completed his Ph.D. He became a full professor in 2003. His appointment is half research, half diagnostic service to ADRDL. His passion for research has brought in \$7.5 million in research funding with more than \$14 million in consortium grants. His research has netted

numerous inventions, licensed technologies and patent applications, generating more than \$700,000 in royalty returns to South Dakota State University.

Nelson's wife, Julia Nelson is a Research Associate in the department in the molecular diagnostic area so she works with his research group and understands his passion.

Jane Christopher-Hennings, head of the Veterinary and Biomedical Sciences Department and Director of the Animal Disease Research and Diagnostic Lab describes Nelson as a "perfectionist who likes to help others achieve their goals in science and technology."

IMPORTANT MENTORS

Nelson said his early days in the ADRDL were very memorable. He says past department heads and directors, such as Dr. John Thomson and Dr. Darrell Johnson, saw potential in people, often long before they saw it in themselves. Their vision and support had a great impact on his career.

"Dr. Barry Dunn (as Dean and now President) and Dr. Jane Christopher-Hennings (current Department Head and Director) provide exceptional mentorship and encouragement, pushing me to take on more responsibility," Nelson said.

By Connie Groop





SDSU Students Prepare for Veterinary Careers

Giving SDSU's pre-veterinary students a Jackrabbit sendoff to vet school



THE ADVANCEMENT OF TWELVE South Dakota State University students into veterinary school was highlighted at a Stethoscope and Scholarship ceremony in Brookings in April. The students completed pre-veterinary science courses and moved to specialized universities to complete their training to become veterinarians.

Dr. Russ Daly, SDSU Veterinary and Biomedical Sciences, explained the stethoscope presented to each graduating student, courtesy of SDSU and the South Dakota Veterinary Medical Association, is a symbol of the profession the students are entering.

"It is a personalized tool you'll use every day, no matter whether dealing with a dog, a cow or an exotic animal," Daly said. "This stethoscope connects you with your patients, their owners, and the animals you will save. With the SDSU emblem, it will remind you of where your training began."

Dr. Jane Christopher Hennings, Head of the Veterinary & Biomedical Sciences Department and Director of the South



Dakota Animal Disease Research & Diagnostic Laboratory, told the students they have a bright future ahead of them.

"My advice is a real challenge: know everything about everything," she said, a comment that brought laughter. "You need to know your surgery, bacteriology, virology and many other subjects, but also try to

become an expert in something! Welcome to the profession."

Students shared that this was a profession most chose early in their lives. Interaction with animals was a common thread. Students reflected that they warmed cold calves when brought to the house, they played with pigs in the barns or they

worked at the Humane Society. Work at the South Dakota Animal Disease Research and Diagnostic Laboratory on campus heightened interest for several.

Alex Rogen, whose family has a vet clinic at Brandon, S.D., said he grew up knowing the career path he would take. He came to SDSU and worked at the diagnostic lab. It was exciting as he helped to complete research. He said the staff was like a second family. He looks forward to vet school and helping in the family business.

"We have a high percent who want to come back to South Dakota and work in a clinic that handles both large and small animals," Daly said.

bunk, she'd end up doing something with animals," he said. "Later, when I was out there treating a sick cow, and ready to give up, she wanted to try one more time."

Ashley's mom, Judy Ourada said, "We're proud of her. She applied at four schools and interviewed at four. She knows it takes a lot of work to get into vet school and she can handle it."

Daly explained the application is rigorous. SDSU offers a first-year seminar specifically for pre-vet students that details the costs and competitive requirements to get into vet schools. Work experience needs to show students understand what being a vet will require. Some have spent four years

"We are all very proud of you as you begin this new chapter in your life," Daly said. "We won't forget about you. And we hope you won't forget about us."

SDSU PRE-VETERINARY STUDENTS ACCEPTED TO VETERINARY SCHOOLS FOR FALL 2017

- **Taylor Aubrey**, Amherst, NH attending University of Minnesota
- **Madison Bieber**, Bowdle, SD attending Iowa State University
- **Megan Blanchard**, Worthington, MN attending University of Minnesota
- **Nathan Howlett**, Harrisburg, SD attending Ross University

"It is a personalized tool you'll use every day, no matter whether dealing with a dog, a cow or an exotic animal," Daly said. "This stethoscope connects you with your patients, their owners, and the animals you will save. With the SDSU emblem, it will remind you of where your training began." — Dr. Russ Daly

Pictured above: From left, Madison Bieber, Nicole Vanden Berg, Ashley Ourada, Anastasia Schroeder, Donovan Taylor, Megan Blanchard, Nathan Howlett, Taylor Aubrey, Alex Rogen, Ashley Swanson, Jodi Ver Burg, Nina Manzey.

Pictured left: Dr. Russ Daly speaks to the SDSU pre-veterinary students.

Parents and grandparents surrounded Ashley Ourada as she worked to finish one of her last assignments after the ceremony.

"I want to work with big animals," Ourada said. "I grew up with cattle. Advances in technology and genetics are good and bad. I read about an artificial uterus that can save premature lambs. I can see how that would be very helpful. Dr. Daly told us to remember that animal health is a series of tradeoffs, good and bad. I'll remember that."

Her dad, Dave Ourada knew his daughter was headed for this profession. "I was pretty sure when she was three years old and petting cattle in the feed

at SDSU, others have graduated and come back to work on a graduate program while waiting to get into vet school. One student just completed her sophomore year. She will start vet school at Iowa State before she completes her degree at SDSU.

As a licensed veterinarian, Dr. Daniel Scholl, SDSU Vice President of Research and Economic Development, said, "Unless you've applied to vet school, you don't know how special the experience is to be chosen. I thought about being a veterinarian since I was 11. I had everything planned out for a specific practice, specific area, and specific state. Not a single bit of that happened but I've had a fascinating and interesting career, working in three different countries. I share that veterinary medicine opens doors for you to places you never imagined you'd be going culturally. Learn all you can and grow as a person. Package that with your training to become a special veterinarian."

- **Nina Manzey**, Cleveland, MN attending Ross University
- **Ashley Ourada**, Lucan, MN attending University of Missouri
- **Alex Rogen**, Brandon, SD attending Iowa State university
- **Anastasia Schroeder**, Merville, Iowa attending Iowa State University
- **Ashley Swanson**, Pukwana, SD attending Iowa State University
- **Donovan Taylor**, Fort Frances, Ontario attending Ross University
- **Nicole Vanden Berg**, Edgerton, MN attending University of Minnesota
- **Jodi Ver Berg**, Rock Valley, IA attending Iowa State University

SCHOLARSHIP WINNERS

Besides the recognition of the pre-vet students, scholarship certificates were handed to undergraduate students.

This is the first year for a scholarship funded by Bruce and Lynette Durheim.



The couple lives near Frederick and raise Red Angus cattle.

"We know the need for large animal vets," Bruce Durham said. "As cattle producers, this is a way we can reach out to give back to the livestock industry which has been very good to us."

The couple sees this as an important investment in the future of the industry.

Scholarship winners included:

- **Bruce and Lynette Durham Scholarship:** Sidney Bierman of Aberdeen, SD.
- **Dr. Harry Halverson Memorial Scholarship:** Emma Nelson of South Range, WI.
- **Dr. J.B. Taylor Memorial Scholarship:** Lindsay Miller of Bowman, MN.
- **Freeman Lewis Veterinary Science Scholarship:** Paige Hinton of Winnipeg, Manitoba; Jennifer Huber of Canton, SD and Sydney Swindler of Mitchell, SD.
- **Richard and Carol Dierks Scholarship:** Jace Philipsen of New Underwood, SD.
- **RTI Scholarship:** Miranda Painter of Sioux Falls and Alexandra Preszler of Roscoe, SD.

By Connie Groop

Pictured left: Dr. Daniel Scholl, SDSU Vice President of Research and Economic Development talked about his experiences as a veterinarian

Pictured right: Scholarship recipients, from left, Jennifer Huber, Alexandra Preszler, Sidney Bierman, Colette Woyke, Lindsay Miller, Sydney Swindler, Megan Kellen, Miranda Painter, and Emma Nelson.



Proposed Educational Partnership May Allow Students to Complete First Two Years of Veterinary School on SDSU Campus

South Dakota State University leaders are working with the University of Minnesota to define the financial feasibility and structure related to creating a 2+2 program that would pair two years of veterinary education at the SDSU campus in Brookings with two years at the University of Minnesota College of Veterinary Medicine in St. Paul. Participants in the program would earn a doctor of veterinary medicine (DVM) degree upon completion of the program.

University leaders have identified four areas of study that will help determine the feasibility of a 2+2 program, including regional interest and enrollment, accreditation, structural organization, and additional degree opportunities for students.

A 2+2 program assures South Dakota students of reduced tuition rates and would allow admitted SDSU students reduced time to degree completion by dual enrollment in a bachelor's degree program plus the DVM curriculum. In addition, since the proposal is for 20 students per class, this proposes a high faculty to student ratio, allowing for hands-on training and small group learning

More than 200 SDSU students are now enrolled in a pre-veterinary course of study, which means SDSU has a ready supply of highly qualified potential applicants for a 2+2 program. These students currently must seek DVM degrees outside of South Dakota.

Currently, due to livestock expansion in South Dakota, food animal veterinarians particularly represent a critical component to economic growth in animal agriculture in South Dakota and the region. Adding more teaching veterinarians to the SDSU faculty would bring additional expertise in diagnostic testing and animal disease research to South Dakota to benefit students, the food animal industry in the region, wildlife services, companion animal interests and public health.

For more information, contact Dr. Jane Christopher-Hennings at Jane.Hennings@sdstate.edu, or Dr. Chris Chase at Christopher.Chase@sdstate.edu.

The background of the advertisement is a photograph of a vast, green grassy field under a bright, orange-hued sunset sky. The sun is low on the horizon, creating a warm glow over the landscape. A wire fence with wooden posts runs across the middle ground.

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SDSU Now Offers Conservation Planning and Park Management Major

Creating opportunities for outdoor enthusiasts

SOUTH DAKOTA STATE UNIVERSITY has a new undergraduate major for those who love the outdoors, enjoy working with people, and have an interest in outdoor recreation.

The Department of Natural Resource Management and South Dakota Game, Fish and Parks worked closely together to design the new program, Conservation Planning and Park Management.

“We have designed a new major that will meet the needs of South Dakota Game, Fish and Parks as well as training students interested in federal jobs, non-government jobs and those interested in careers that involve managing our natural resources,” says Michele Dudash, department head and professor for the Department of Natural Resource Management at SDSU. “There are few programs like this in the country.”

Conservation Planning and Park Management is an interdisciplinary science that trains students to develop conservation strategies at landscape scales, according to Dudash. This program will prepare students for many different careers. Some of these include: Park Management, Landscape Conservation Planning, Natural Areas Management, Land Use Planning, Park Ranger and Interpretive/Naturalist positions.

The program also offers a Park Administration and Management Specialization available for students. This specialization will prepare students for careers in park management. Courses for this specialization include accounting and park programming, and are designed to enhance the human management focus needed for these types of occupations.

Some of the additional coursework will cover topics including: leadership training, ecology, natural resource management, conservation planning, outdoor recreation and park management, land use planning and the human dimensions aspect of this field.

IN THE FIELD TRAINING

Gaining hands-on experience is just as important as classroom learning. Luckily, there are several different paths to internships and jobs for students going into this field.

“There are a lot of opportunities out there,” says William Collignon, a Regional Park Supervisor for South Dakota Game, Fish and Parks. “Roughly, there are 400 seasonal positions throughout South Dakota Game, Fish and Parks. A majority of those are within the South Dakota State Parks system. Internship positions probably range between 30 to 50 in the summer throughout the state.”

Internships allow students to gain experience on how a campground or park operates to meet the needs of its users. Internship opportunities for this major range anywhere from, campground security, campground supervisor, park manager and park interpretation to mowing, license sales, customer service and conflict resolution.



Pictured: Abby Schauer is a senior at SDSU majoring in Ecology and Environmental Science, with a minor in Spanish. During summer 2017 she had an internship at Mount Rushmore where she was a Mount Rushmore History Association Intern in the Branch of Interpretation at the memorial. Her duties as an interpretive intern were to research, develop and present interpretive programs relating to a variety of topics about Mount Rushmore. She provided information to visitors about the memorial and assisted with any questions they may have had about the memorial or the surrounding Black Hills area. – Photo by Leanna Harville

“Our internships provide students with good hands-on experience,” says Emmett Keyser, Regional Supervisor for the Southeast South Dakota Game, Fish and Parks. “We get them engaged. They get to ride along with federal agents, take boat and hunter training courses as well as other specific classes we provide them.”

Knowing there are so many opportunities waiting, this new program should attract and retain many South Dakota students as well as non-resident students.

If you have any questions, contact Michele Dudash at Michele.Dudash@sdstate.edu, or William Collignon at william.collignon@state.sd.us. Curious about what jobs or internships are available? Check out: <http://dhr.sd.gov>.

*By Emily Meyer, Spring 2017 SDSU Agricultural
Communication graduate from Orient, SD.*

Natural Resource Law Enforcement Major Gets Strong Start at South Dakota State University

New major exceeds expectations in first two years

THE FIRST STUDENTS ENROLLED IN THE SDSU Natural Resource Law Enforcement major immediately after the major obtained Board of Regents approval in the Fall Semester of 2015. The major originated when the Department of Natural Resource Management saw an opportunity to begin planning for the future by partnering with the state of South Dakota to introduce the new undergraduate major.

The objective of the new major is to prepare students for careers as conservation officers, federal wildlife agents, park rangers and game wardens. The curriculum provides an emphasis on both wildlife law enforcement and natural resource management. SDSU is one of only five similar programs in the United States.

The Natural Resource Law Enforcement major has exceeded expectations during its first two years. “We anticipated 40 students, but 51 students had declared the major by Spring 2016,” said Michele Dudash, Natural Resource Management Department Head. “As of Fall 2017, 84 students have declared Natural Resource Law Enforcement as their major.”

The program focuses on natural resource management, conservation biology, environmental policy and criminal justice. There is currently an advisory committee of state, federal and tribal natural resource agencies that assist in providing some of the curriculum, ongoing assessment and needs of the program.

Hands-on learning through internships form a strong foundation for the major in order to ensure real world experience for the students. According to Dudash, the department has created an internship program specifically for sophomores to allow early exposure to law enforcement careers. “Students are exposed to law enforcement activities at various levels within local, county, state and federal agencies,” said Dudash. “Internship activities include ‘ride alongs’ with cooperating professionals for 24 hours, participation in conflict resolution training, hunter education training and delivery, and more.”

There is also a conservation officer internship offered to juniors and seniors administrated by South Dakota Game Fish and Parks (SDGFP). This internship is limited to two to four students per summer. Most of the students who are involved in the internship program end up being hired by SDGFP once they graduate. Nearby states also offer internships or summer work experiences, such as Minnesota and Iowa.

Kendyll Jones, a senior Natural Resource Law Enforcement major from Harrold, SD, completed two conservation officer internships for SDGFP. She interned as a habitat specialist for SDGFP and Pheasants Forever.

Following graduation she will attend the law enforcement training academy before advancing into the field training program with the SDGFP.

“I was ecstatic when SDSU created the Natural Resource Law Enforcement major. I knew I wanted to be a conservation officer when I was in high school,” she says. “Growing up, my parents ran a commercial pheasant hunting operation so we had a good relationship with our local conservation officer. I had to complete a senior project in high school and decided to follow my interest and began riding with the local conservation officer where I found my passion for the career. My parents constantly supported me. They are proud to say their daughter is going to be a game warden.”

Dudash commented on the benefits of the major saying, “The Natural Resource Law Enforcement program provides the educational background relevant to conserving and sustaining public trust resources and maintaining public safety, not only in South Dakota but in other states and federal lands as well.”

By Steph Hennen, Spring, 2017 Agricultural Education, Communication and Leadership graduate from Morris, MN.



Photo by South Dakota State University

Pictured: Kendyll Jones enjoyed the hands-on experiences gained as part of the Natural Resource Law Enforcement curriculum at SDSU.

Future Medical Professionals Recognized at SDSU Ceremony



AS A LEADER IN SOUTH DAKOTA'S healthcare, a South Dakota State University alumnus asked pre-professional students to reflect on their first day at SDSU and all they have done to carve a path for themselves in the field.

After leaving SDSU in 2003, Dr. Nathan Miller completed training at the University of South Dakota Sanford School Of Medicine, Vermillion. He works as a hospitalist at Avera McKennan Hospital & University Health Center and is a USD Sanford School of Medicine Faculty member. His roles at the school

of medicine include serving as the Department of Internal Medicine's Division Chief of Hospital Medicine and coordinator of the last 15 months of medical student education.

He spoke to the students at the 2017 Stethoscope Ceremony, sponsored by the Pre-Professional Science Club and American Medical Student Association. The event, held in April, recognizes graduating students with a personalized symbol of their profession such as a stethoscope, a dental mirror or an optometrist's eye occluder. Forty-eight

SDSU students were accepted into professional training as physicians, dentists, optometrists, chiropractors, physician's assistants and nurses this past spring.

As one who has walked the halls and taken the classes as an undergrad, Miller drew on his experience to share challenges the students either have faced or will face.

"Never stop learning," Miller told the students. "The moment you stop learning, is the moment you should retire. I don't say this to cause fear. It's exciting to be in the field. We constantly learn something new every day."



In 2010, medical knowledge doubled in three and a half years. In 2020, medical knowledge is projected to double in two and a half months. Miller said. "You'll never know it all. That's the mark between a good clinician and a great one. The great one knows when to ask for help. You need to be able to say, 'I don't know but I'll find out.' Does it hurt your ego? Yes, but if you are a team player, you will know who to ask for help. Embrace that."

Hearing from an alumnus was important for those heading off to



Pictured: Dr. Nathan Miller spoke to students at the 2017 Stethoscope Ceremony.

professional schools. According to Greg Heiberger, "Inspirational words from a Jackrabbit and successful leader in healthcare who was in their seat in the not-so-distant past is an important culmination of these students' hard work and preparation for professional training in their fields. The Stethoscope Ceremony at SDSU is one method to help congratulate our pre-professional students."

Heiberger works closely with the program as the Undergraduate Program Manager and Lecturer in the SDSU Biology and Microbiology Department.

SDSU has a long history of preparing future leaders across healthcare. In the last ten years there has been immense growth in placing students in medical, dental, optometry, chiropractic, and other doctoral level programs.

"It's incredible to watch these students rise and see them do so well," Volker Brözel, head of the Biology and Microbiology Department, said. "There are many key faculty members in the department who work with them through the whole course sequence. The students start with intro to biology and that sets the stage and tone for what they'll be learning the next four years."

He noted, "We have a high proportion of students who succeed and excel. Professional schools are really competitive and tough to get accepted into. We have wonderful, committed staff members who really care for the students and prepare them for the next level of training in the professional settings."

"Our undergraduate students are some of the best-prepared in the region for medical school in part because of our undergraduate cadaver-based anatomy lab. Being able to study the human body and dissect during the 16-week course is an experience rarely found at the baccalaureate level. It shows the strong science investment at SDSU in the healthcare fields," Brözel said.

The strength of the program shows in the increasing acceptance to professional programs in the last 10 years. The acceptance rate is remarkable. Heiberger noted that in 2003, 10 students were accepted to professional schools. At the 2017 Stethoscope Ceremony, that number climbed to 48.

By Connie Groop

LISTING OF STUDENTS IN

STETHOSCOPE CEREMONY AT SDSU:

Degree Abbreviations: D.C. – Doctor of Chiropractic; D.D.S. – Doctor of Dental Surgery; D.O. – Doctor of Osteopathic Medicine; D.P.M. – Doctor of Podiatric Medicine; M.D. – Doctor of Medicine; M.S. P.A.S. – Master of Science in Physician Assistant Studies; O.D. – Doctor of Optometry; P.T. – Physical Therapy and Pharm.D. – Doctor of Pharmacy.

- **Brookings, SD:** **Amy Munsterman**, D.C., Northwestern Health Sciences University, Bloomington, MN; **Kaleb Vig**, D.C., Northwestern Health Sciences University, Bloomington, MN; **Kevin Parr**, M.D., University of Kansas School of Medicine, Kansas City, KS.
- **Canton, SD:** **Develyn Vetos**, M.D., Sanford School of Medicine at USD, Vermillion, SD.
- **Castlewood, SD:** **Carver Ching**, M.D., Sanford School of Medicine at USD, Vermillion, SD.
- **Chamberlain, SD:** **Jaymee Knippling**, M.S. P.A.S., School of Health Sciences at USD, Vermillion, SD.
- **Clear Lake, SD:** **Rachel Thiewes**, M.S. P.A.S., School of Health Sciences at USD, Vermillion, SD.
- **DeSmet, SD:** **Andrew Foley**, M.D., Sanford School of Medicine at USD, Vermillion, SD.
- **Elk Point, SD:** **Hannah Klinkhammer**, P.T., School of Health Sciences at USD, Vermillion, SD.
- **Hot Springs, SD:** **Leslie Elmore**, D.O., West Virginia College of Osteopathic Medicine, Lewisburg, WV.
- **Madison, SD:** **Jordan Finck**, D.P.M., Des Moines University College of Podiatric Medicine & Surgery, Des Moines, IA; **Mona El-Gayar**, M.D., Sanford School of Medicine at USD, Vermillion, SD.
- **Mitchell, SD:** **Kirby Fuerst**, D.D.S., University of Iowa College of Dentistry, Iowa City, IA; **Ty Moody**, M.D., Sanford School of Medicine at USD, Vermillion, SD.
- **Pierre, SD:** **Carson Eisenbeisz**, M.D., Sanford School of Medicine at USD, Vermillion, SD.
- **Redfield, SD:** **Ben Gillette**, D.O., Edward Via College of Osteopathic Medicine, Spartanburg, SC.



Pictured: Dr. Daniel Scholl, left, looks on as Dr. Nathan Miller awards a stethoscope to Rachel Thiewes.

- **Rapid City, SD:** **Andrew Wilson**, D.D.S., University of Nebraska Medical Center College of Dentistry, Omaha, NE.
- **Sioux Falls, SD:** **Samuel Alfred**, D.C., Palmer College of Chiropractic, Davenport, IA; **Rebecca Ryan**, D.D.S., University of Colorado School of Dental Medicine, Aurora, CO; **Wyatt Chicoine**, D.O., A.T. Still University College of Osteopathic Medicine, Kirksville, MO; **Tyler Anderson**, D.O., Edward Via College of Osteopathic Medicine, Blacksburg, VA; **Jalen Lamb**, D.O., Edward Via College of Osteopathic Medicine, Blacksburg, VA; **Jack Sutcliffe**, D.O., Edward Via College of Osteopathic Medicine, Blacksburg, VA; **Elijah Auch**, D.O., University of Iowa-Carver College of Medicine, Iowa City, IA; **Jaelin Otta**, M.D., Sanford School of Medicine at USD, Vermillion, SD; **Luke Klugherz**, M.D., University of Minnesota Medical School, Minneapolis, MN; **Patrick Korman**, O.D., Indiana University School of Optometry, Bloomington, IN; **Alyssa Bump**, M.S. P.A.S., School of Health Sciences at USD, Vermillion, SD.
- **Spearfish, SD:** **Landon Olson**, D.O., Kansas City University of Medicine and Biosciences, Joplin, MO; **Zackery Olson**, P.T., School of Health Sciences at USD, Vermillion, SD.
- **North Dakota: Fargo, ND:** **Hannah Kruger**, M.D., UND School of Medicine & Health Sciences, Grand Forks, ND.
- **Minnesota: Hanska, MN.:** **Brook Anderson**, M.S. P.A.S., Bethel University, St. Paul, MN.; **Minneapolis, MN:** **Sarah Ericson**, D.O., Burrell College of Osteopathic Medicine, Las Cruces, NM; **Rosemont, MN.:** **Garet Miliner**, O.D., Southern College of Optometry, Memphis, TN.
- **Iowa: Grenville, IA:** **Taylor Anderson**, D.D.S., University of Iowa College of Dentistry, Iowa City, IA; **Larchwood, IA:** **Mary Schreurs**, M.S. P.A.S., St. Ambrose University, Davenport, IA; **Rock Valley, IA:** **Jordan Dykstra**, M.D., Sanford School of Medicine at USD, Vermillion, SD; **Sutherland, IA:** **Kendra Rohlfen**, D.C., Northwestern Health Sciences University, Bloomington, MN.
- **Wisconsin: La Crosse, WI:** **Tanner Toppen**, D.C., Northwestern Health Sciences University, Bloomington, MN; **New Richmond, WI:** **Haley Turany**, D.O., Edward Via College of Osteopathic Medicine, Blacksburg, VA.
- **Kansas: Topeka, KS:** **Brittany Sipp**, D.O., Edward Via College of Osteopathic Medicine, Spartanburg, SC.

BIOLOGY AND MICROBIOLOGY DEPARTMENT OFFERS MASTER'S DEGREE IN HUMAN BIOLOGY

STUDENTS INTERESTED IN THE daunting task of attending medical school now have another path to help them get there.

New as of the Fall 2017 semester, the Department of Biology and Microbiology offers a one-year, 32-credit master's program in human biology. The program emphasizes professional development, preparation for medical school and allows students to explore career paths in the medical field.

Assistant Professor Greg Heiberger is the coordinator for the program and said it's the first of its kind in the state and immediate region.

"This type of program has been a national trend over the past 10 years, but the closest one is in Kansas City or Denver," Heiberger said. "The cost, size and cohort feature of ours is its advantage."

The program offers courses and topics covered in medical school to "give students a leg up" when they get to medical school, Heiberger said. The idea is to prepare students for success by using the same pace and intensity, giving them even more well-rounded knowledge than their undergraduate degree.

Most programs similar to this one cost around \$30,000 to \$40,000, whereas South Dakota State's costs \$15,000, according to Heiberger.

The program was approved by the South Dakota Board of Regents in May 2017 and began in the fall with six students enrolled. The small class size gives students a close support group with other students and stronger relationships with professors and advisers, Heiberger said.

LeAndre Kennedy, a first-year graduate student in the program, said he benefits from the increased personal interaction.

"In undergrad, most classes were at least 100 people and it was harder to



Pictured: LeAndre Kennedy (top) and Austin Walz.

have a connection with many classmates, especially the professor," Kennedy said. "In this program, we all want the same things, so it's a lot of helping each other out. We meet a lot and we are forming legitimate friendships and it's really working to our advantage."

Kennedy said it has been "great to build relationships with people in the world we

want to be in," by meeting with professors and advisers weekly while also shadowing professionals.

Another student in the program, Austin Walz, said he's been logging hours shadowing in hospitals and was looking forward to potentially observing surgeries during Winter Break.

The program does not require a traditional thesis. Instead, students write a research paper on a topic of their choice. Kennedy and Walz said this was special to them as they could research topics they were passionate about.

Walz, striving to work in oncology, focused his paper on a potential therapeutic drug for cancer. As a former athlete, Kennedy's dream is to become an orthopedic surgeon specializing in sports medicine and he was able to research chronic traumatic encephalopathy. CTE, discovered more frequently in athletes during autopsy, is brain degeneration likely caused by repeated head traumas.

"It's cool to have that opportunity to explore our own interests in our research," Walz said. "With traditional science master's programs, you just kind of jump on board with what your adviser is doing in their research."

Biology and Microbiology Department Head Volker Brozel said he values the program and believes it is viewed favorably by medical schools looking at candidates.

"I am excited about it. I hope students will find it valuable," Brozel said. "It is a tall mountain to climb, but I think that's consistent with wanting to undergo medical training. The two go together."

By Emily DeWaard and reprinted with permission from the SDSU Collegian



Anatomy Class

OFFERS TRULY HANDS-ON EXPERIENCE

Scott Pedersen strives to prepare students for future success

SOUTH DAKOTA STATE UNIVERSITY Biology Professor Scott Pedersen uses amusing antics to bring the study of biological structures alive, creating imagery that leaves a lasting impression on those students who take his anatomy classes. Pedersen describes himself as a bit weird and quirky. And sometimes he's a little batty.

"I drive important points home with enthusiastic demonstrations, humor, and vivid (often unforgettable) imagery," Pedersen says.

For those students going into medical fields, knowing how the parts of the body move and function is extremely important. At SDSU, Pedersen uses human cadavers to teach anatomy classes. Being able to investigate the human body, the students touch, feel and see how the sections of the body fit together in a hands-on experience.

When Pedersen came to SDSU 18 years ago, he set up the human cadaver lab. Until recently, it was one of the few available in

the region for undergraduate students to dissect intact bodies.

"After five years of work, we created one of the most successful human anatomy labs in the region," Pedersen said. "What makes it successful is bringing back the best students to help teach the next round of undergraduate students. These students can then get promoted to become part of a dissection team who not only dissect but also teach others. This is great preparation for those going into medical professions."

CADAVER LAB

Nursing, pharmacy, pre-medicine and other students who take the anatomy class from Pedersen work with two bodies brought into the lab from the University of South Dakota, Sanford School of Medicine Body Donor Program.

"We dissect the cadavers differentially," Pedersen said. "With one body, we concentrate on the muscles, nerves and blood vessels and the other we look at the

digestive and reproductive systems. It's different from a class taught in medical school. We work slowly. The bodies are usually kept for a semester and then returned to the family. Starting with a new body each semester provides more opportunities for dissection for the advanced students and presents fresh dissections to the new students during each subsequent semester."

The anatomy class taught by Pedersen is unique, according to Greg Heiberger, Undergraduate Program Manager and Lecturer in the SDSU Biology and Microbiology Department. "For some, it is a reason to come to SDSU and it is one of the most impactful learning experiences for many of our students. Many of them love their experience in anatomy," he said.

Heiberger said this anatomy experience is intense and hands-on. "Dr. Pedersen has invested time and effort to set up the undergraduate cadaver-based human anatomy lab," Heiberger said. "That pays



off in the increased acceptance of students to professional programs. Pedersen's interns have a 70 percent acceptance rate to medical school. Pedersen taught at a dental school. What they are getting in his lab is foreshadowing what they will experience in a professional school. He brought that knowledge with him so he knows what can best support the students. That's unique in terms of faculty buy-in and investment, also in terms of student outcomes."

And, according to Heiberger, "It's an example of how we care what these students learn."

Pedersen's background in skull mechanics allows him to lecture about the interface between anatomical structures and engineering, be it blood flow, airflow through the throat, skull strength and resistance to fracture, or how dental braces help move teeth through your jaws.

"When you show students something out of the ordinary, it sticks with them. That's

my job as a professor, to make the material interesting so it is not forgotten," Pedersen said. "As a kid, I needed something to focus me into learning. Now I'm good at teaching 100- and 200- level classes because I can be a kid. For a first-year student who doesn't have much of a background, my not being a stuffed shirt helps them learn."

And it doesn't hurt that he's a bit batty as well.

BATTY PROFESSOR

Pedersen also studies bats, "Because they are more interesting than humans." Generally, he devotes his summers to traveling and learning more about bats. To see some of the papers and research he's done in the Caribbean Islands and other countries, go to <http://bathead.com/>.

By Connie Groop

Pictured: Scott Pedersen uses anatomical models to help convey concepts to students in his anatomy classes.



HUMAN ANATOMY AND CADAVER LABORATORY EXPANSION

The SDSU Human Anatomy and Cadaver Laboratory Expansion will enhance undergraduate and graduate students' opportunities for critical hands-on dissection and learning in multiple pre-professional and other medical-related disciplines. The enhanced laboratory environments will foster students' abilities to develop important skillsets that will continue to make them competitive regionally and nationally for careers and for graduate and professional programs.

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Biology Instructor Awards Personally Funded Scholarship

Samson Smith rewards good decisions

BIOLOGY INSTRUCTOR AND LAB COORDINATOR

Samson Smith recently awarded the first of an annual, personally funded \$1000 scholarship to an undergraduate student studying biology. Smith is the Biology Survey I and II instructor, which are courses for non-biology major students.

The You Made a Good Decision scholarship was presented for the first time this year and Smith is planning to provide it annually to a student with at least a sophomore standing who has changed their major to biology. Whitney Vesey, a junior Biology Pre-Dental major, is this year's recipient.

The scholarship is funded by the sale of the Biology 101 lab manual authored by Smith. By writing the manual specifically for students in his class to use, cost of material for the class was cut in half.

"I'm incredibly grateful for the numerous scholarship donors who enabled my education, and it's important to me that I give back now that I find myself in a position to do so," Smith says.



Pictured: Whitney Vesey was the first recipient of Sam Smith's You Made a Good Decision Scholarship.

He chose to name it the "You Made a Good Decision" Scholarship because he thought it was fun and would make people smile.

Vesey was studying Early Childhood Education and decided to change her major to Biology Pre-Dental.

"My freshman year I wasn't particularly enjoying or excited about the classes I was taking in Early Childhood Education, however it was very different for Biology 101; I was interested and fascinated by what I was learning," Vesey relates. "I researched my options and came to the conclusion that I needed to change my major."

Vesey says that she is honored to receive the scholarship because it not only helps financially, but receiving it from a professor who significantly impacted her college career makes it even more special.

By Sydney Sleep



Two Biology Instructors Receive Tom Cheesbrough Teaching Award

Samson Smith and Mandy Orth recognized by Biology and Microbiology Department

Pictured: Sam Smith (left), and Mandy Orth (right) accept the Tom Cheesbrough Award for Teaching in Biology and Microbiology from Volker Brozel, Biology and Microbiology Department Head.

SOUTH DAKOTA STATE UNIVERSITY (SDSU)

instructors Samson Smith and Mandy Orth have been recognized as outstanding teachers by receiving the 2017 Tom Cheesbrough Award for Teaching in Biology and Microbiology.

"This award was established to acknowledge high performance in teaching among the instructors in our department," explains Department Head of Biology and Microbiology Volker Brozel.

The Tom Cheesbrough Award for Teaching was started in 2013 to honor Dr. Tom Cheesbrough, who served as the Head of the Biology and Microbiology Department for 10 years.

"The Department of Biology and Microbiology has a lot of great faculty, so it is a huge honor for anyone to win this award because there are so many wonderful teachers in the department," said Greg Heiberger, Biology and Microbiology Undergraduate Student Experience Coordinator.

The awardees are chosen following a nomination process.

Orth is an instructor and lab coordinator for the Majors Biology Program. She teaches General Biology I and II. Orth began teaching the Biology First Year Seminar in 2010 as a graduate teaching assistant. In addition to being an instructor, she currently mentors 10 graduate students. Orth is also working on finishing her Ph.D.

"Mandy is truly a balanced scientist," said Brozel. "She cares about research, is an expert in the field and serves as a great mentor for students."

Smith is an instructor and lab coordinator for Biology Survey I and II, which are courses for students who are non-biology majors. He has been teaching at SDSU since 2013. Along with being an instructor, Smith mentors several graduate students.

"Many of the non-biology major students don't particularly want to take biology, but Sam does a great job of breaking through barriers with students and stands out as a really positive mentor," said Brozel.

By Sydney Sleep



COLLEGE OF AGRICULTURE AND BIOLOGICAL SCIENCES **AMBASSADOR PROGRAM**

Thirty ambassadors attend 120 recruitment events

A TEAM OF ABOUT 30 VOLUNTEER students of various majors plays a front-line role in recruiting for the College of Agriculture and Biological Sciences at South Dakota State University.

The Ag-Bio Ambassadors are chosen to represent the College of Agriculture and Biological Sciences by participating in high school visits throughout South Dakota and neighboring states, college and career fairs, science fairs, Jackrabbit receptions, College functions and numerous other events.

"We are extremely proud of the Ag-Bio ambassadors and grateful for the outstanding service they provide on behalf of the College of Agriculture and Biological Sciences," says Interim Dean of the College of Agriculture and Biological Sciences, Don Marshall. "Their participation in recruitment of prospective students, science fairs, career fairs, and several college events helps SDSU immensely, and also provides outstanding leadership development opportunities for the ambassadors themselves."

The ambassadors represent the biggest college on campus. Altogether, they attend about 120 events annually. Each ambassador is required to attend at least five events each semester.

Brad Blaha, Coordinator of Recruiting and Academic Services for the College of Agriculture and Biological Sciences and advisor for the ambassador program,

"I was influenced by ambassadors who visited my high school, so knowing we are continuing that is a pretty cool experience." – Jennifer Muller, Ag-Bio Ambassador, Gary, SD

believes the Ag-Bio Ambassadors play a significant role in attracting students to attend SDSU.

"Our ambassadors get in front of thousands of prospective students to give a real-life perspective from college students and share why they chose SDSU," Blaha said.

The program has grown from its beginnings about 20 years ago. Blaha now tries to keep about 30 to 35 students on the team so that everyone knows each other, but the group is still big enough to accomplish all of its tasks.

"We consistently have a good crop of students interested," Blaha said.

It is a competitive process to be selected for the team. Students go through an interview process and, if selected, can serve as an ambassador for the remainder of their college career.

"My favorite part of being ambassador is answering questions high school students have about college," says Jennifer Mueller, a junior Agricultural Education, Communication and Leadership major from Gary, SD. "They all are so interested and eager to find out what their future at

SDSU could look like. The program allows high school students to learn more about majors they didn't know the College of Ag and Bio offered and to talk with real students. I was influenced by ambassadors who visited my high school, so knowing we are continuing that is a pretty cool experience. The ambassadors serve as one more connection students can make to a future here and I think that impact is endless."

By Sydney Sleep, Senior Agricultural Communications Major and Ag-Bio Ambassador from Spearfish, SD.

Pictured: The 2017-2018 College of Agriculture and Biological Sciences Ambassadors include, front row, from left: Juliana Pederson, Kyla Mauk, Kelbi Dean, Breanna Vogel, Peyton DeJong. Second row, from left: Holly Krueger, Kirstan Hyser, Madison Schafer, Katherine Hodge, Sydney Sleep. Third row, from left: Mathew Kunerth, Sanne de Bruijn, Katie Berndt, Anna Wolles, Sam Johnson, Jennifer Mueller, Cody Myers, Madelyn Regier. Back row, from left: Shane Mueller, Jacob Kaiser, Andrew Heine, Braedon Hinker, Nathan Koehl, Dalton Kampsen, Tye Harris, Jonathan Linke, Tristin Fliehe. Not pictured: Malorie Anderson.



Photo by National Pork Board

Pig Farmer of Tomorrow: SDSU Student Tells Pork's Story

Madison Schafer serves as pork industry spokesperson

FACTS ABOUT THE PORK INDUSTRY ARE WOVEN INTO the heart of a young woman from Minnesota who is a junior at South Dakota State University in Brookings, SD. Her passion for telling pork's story led the National Pork Board to name Madison Schafer an inaugural "Pig Farmer of Tomorrow." From "Oink Outings" to social media to ag classes, Schafer proudly shares the experiences she's learned from her family's farm, and was thrilled to share her stories with consumers over the past year.

"It is important for all pig farmers to take every opportunity to start conversations about farming," Schafer says. "These connections help dispel misconceptions about our farming practices and show consumers how much we care about raising healthy pigs."

Schafer grew up near Goodhue, Minn., the seventh generation of her family to farm. This year, her family's operation includes a 2,200-sow unit and seven replacement gilt development barns along with raising 350 registered cow-calf pairs. The family works together to improve the operation for future generations.

Schafer is one of three young people chosen during spring 2017 in the inaugural program to recognize the future leaders of the pork industry, according to National Pork Board President Jan Archer, a pork producer from Goldsboro, NC.

The award recognizes farm leaders, ages 18-29, who intend to make pig farming their life's work and who commit to raising pigs using the pork industry's We Care ethical principles, according to a news release. The winners have spent time speaking at Pork Checkoff events and providing content on #RealPigFarming, which is the pork industry's social media program. An industry panel of judges selected the 2017 Pig Farmers of Tomorrow.

The position is perfect for Schafer as she excels in sharing the story of her family's pig farm. Schafer plans to earn a degree in ag communication and ag leadership. Minors in animal science, marketing and ag business will enhance her knowledge as she continues to be a spokesperson in the industry.

LEARNING AT A YOUNG AGE

At home working in and out of the hog barns, the welfare of the animals has been an important tradition for the Schafer family. In addition to her mom and dad, 15 full/part time employees help her grandparents and an aunt and uncle run the operation.

"When I was in third grade, I would help my dad with the sows," Schafer says. "It wasn't until I was in sixth grade that I realized the work I did with our animals wasn't the same as what

my friends experienced. I helped my dad work with the animals through the breeding, farrowing and weaning processes.”

Schafer started 4-H when she was in kindergarten. In seventh grade, she joined FFA. She found out her personal stories impacted people when she helped with “Oink Outings” with the Minnesota Pork Board when she was in ninth grade. The group set up events in the Twin Cities and area Farmers’ Markets.

At the Oink Outings, “For every question people asked us, we’d donate to the local food bank,” Schafer explains. People appreciate the donations and generally were willing to ask a question. It initiated interaction and helps tell pork’s story to consumers. “One



Pictured above: As part of her duties, Madison Schafer helped make educational videos about pork production. Video footage was recorded in the new SDSU Swine Education and Research Facility.

Pictured left: Madison Schafer was selected as an inaugural Pig Farmer of Tomorrow for the National Pork Board.

of the favorite places we visited was the Minnesota Zoo. Among the tropical birds, we gave out washable tattoos, answered questions, and handed out sunglasses to those who asked the questions. Simple questions such as ‘what sound does a pig make?’ elicit answers. Through the experiences, I realized I have something to get across to people and people are interested in my story.”

Once Schafer was chosen as a Pig Farmer of Tomorrow, the environmental practices, proper employee handling and use of antibiotics in her family’s operation were checked according to the Common Industry Audit. The audit confirmed the family’s commitment to quality care.

In accepting the title, Schafer went through training sessions to learn how to interact with the media. She made videos and worked with social media to learn key phrases and ways to handle media queries.

LOVE OF LEARNING

Attending SDSU provides learning in her quest to be a spokesperson for the industry. She praised the faculty and facilities for learning at the University. The recently opened SDSU Swine Education and Research Facility offers enhanced opportunities for students and consumers.

“It is great to have the facilities where we can learn and teach consumers about the care and feeding of pigs,” she notes. “In my classes, I learned the importance of the nutrition in the feed given to animals. I also learned the sciences behind the medications administered to hogs. Those are things I want to share.”

“Madison is a tremendous spokesperson and asset for the U.S. swine industry,” Robert Thaler, one of her professors in the Animal and Range Sciences Department at SDSU, says. Thaler also serves as swine specialist for SDSU Extension. “Her passion for pigs and the people who raise them is very evident, and she makes a real difference. We’re proud to have young people like her at SDSU, and it’s because of students like her that we received so much support to build our new Swine Education and Research Facility at SDSU. In fact, working with the National Pork Board, Madison has already completed educational videos at the new SDSU swine facility.”

Schafer’s activities took her out of the classroom for 14 days during the spring semester. “My teachers were great to work with and understood the importance of the activities. They are proud of what I am doing. I wouldn’t have been able to be where I am today without their understanding.”

Schafer believes she’s learned where her talents lie. “Some people love the pigs in the pork industry; I love the pigs because I love the people in the pork industry. I really love to see a person’s reactions when I share my background. I have empathy and I want to ease the concerns of people by explaining the care we give to our animals.”

PRACTICING BALANCE

“It’s our obligation to stay calm, which will make others willing to listen. I listen and then bring their concerns back to my family, and I tell about what we do. If we didn’t care, we wouldn’t be in business very long.”

Schafer says she always tries to be respectful and not back down from her beliefs. When she was younger, she wasn’t comfortable speaking out. Now she embraces the opportunity to share pork’s message.

Once of the biggest problems comes from people who are removed from the farm and don’t understand the practices. She said she can tell that from questions such as, “How many times can you harvest bacon in a pig’s life?” Farmers need to be involved in the conversation to explain the benefits and listen to the questions and provide answers rather than ignoring queries.

“Early on in life, I wanted to be a doctor or a nurse,” Schafer says. “From sixth grade on, it’s always been about the pork industry. Yes, there are hard days. You can’t leave after working 40 hours a week. You can’t leave animals and go to the cabin. I think I’m a better person because I grew up on a farm. I want to stay involved in any way I can.”

In 10 years, “I hope to be on a circuit to speak out and to talk to people who are against what we do in the hog industry,” she said. “Because there are more and more regulations, we must speak while we have a chance. If not, then we won’t have a chance later.”

“With all the technological advances, it is our generation’s job to have conversations that can make a difference,” Schafer says. “As a Pig Farmer of Tomorrow, I’ve been using the facts to share what I know through blogs and social media, and speak about issues. This year I have been sharing my experiences as a real pig farmer, taking people to our barns through what I write and sharing what our family does each and every day.”

By Connie Groop

NEW SDSU FACULTY MAKE ECONOMICS EXCITING

Department takes pride in outstanding new faculty members

SUPPLY AND DEMAND IS ONE OF THE MOST BASIC tenets of agricultural economics. When South Dakota State University's (SDSU) Economics Department demanded top-notch faculty, the market supplied truly high-quality candidates. The fully staffed department now boasts three outstanding new faculty members, all added since fall 2016.

Dr. Deepthi Kolady, teaches the higher-level coursework in the agriculture and resource economics fields in the Economics Department. Her course load includes Farming & Food Systems Economics, which is the capstone course for Agricultural Business majors, Resource and Environmental Economics and the newly added Advanced Farm and Ranch Management.

In the classroom, for capstone courses, Kolady focuses on integrating what students have already learned into practical applications to enable them to apply their knowledge in meaningful ways in their future professions. That includes case study analyses, bringing in guest speakers, and implementing teaching methods that allow students to understand and apply agricultural economic concepts in different ways or from various perspectives.

"For my Resource and Environmental Economics course, students come with varying levels of economics knowledge, so I try to give them a broad background and go deeper in certain aspects," she says. "I try to make them aware of policy changes and economic tools to analyze those policy issues."

Kolady is beginning her second year on the faculty, and 50 percent of her appointment focuses on research.

Her long-term goal is to develop a research program that focuses on understanding people's decision-making process in various contexts such as technology adoption and food consumption choices to inform public policy making. Prior to joining SDSU, Kolady worked on policy issues related to food security and economic development and conducted research on technology adoption issues in developing countries.

"I want to focus my research on understanding farmers' decision-making in regards to precision agriculture and conservation practices, how people make food consumption choices and what policies can be formulated to help farmers and consumers make better decisions," she says.

Kolady had a farming background in her native India, where she received her undergraduate and master's degrees. But she says that her upbringing was not quite like the agriculture many of her students have grown up with in the Midwest.

"In my home state, we grew rubber, coconuts and many of the exotic spices you hear about," she adds.

Kolady's interest in agriculture and economics stemmed from that upbringing, where she says she saw the impact of technology and policy on economics and development. Her home state's political economy situation and development outcome differed from the rest of India, so she became interested in public policy and development, which led her to agriculture and economics.

She went on to pursue her Ph.D. in Agricultural Economics from Cornell University, also completing some post-doctoral work there. After that, Kolady worked at the World Bank and the



Dr. Deepthi Kolady



Dr. Andrea Leschewski



Elijah Kosse

International Food Policy & Research Institute in Washington, D.C., before following her husband to Brookings.

Kolady shares her interest in policy and consumer decision-making with new faculty member Dr. Andrea Leschewski, Assistant Professor in Economics.

Leschewski joined SDSU Fall 2017, and is teaching classes in Ag Business Management and Ag Policy.

"I try to take an interactive, practical approach to teaching," she says. "I focus on helping students apply tools and concepts they're learning so when they go out into their future career, they'll feel comfortable applying those methods."

Leschewski's 50 percent research appointment aims to evaluate what Americans eat and why, the effectiveness of government food assistance and education programs and the effectiveness of the food industry's health-related marketing efforts.

"The overall goal is to use economics to figure out how to address food insecurity and obesity in the U.S., through a holistic, collective approach," she says. "We're analyzing the issue from the consumer, government and food industry perspectives."

Originally from the Chicago area, Leschewski got her bachelor's in Economics and Math at Carthage College in Kenosha, Wisconsin. She got her master's and doctorate at Michigan State University in Agriculture, Food and Natural Resource Economics, specializing in ag markets.

"I was always interested in food, and economics was a way to turn that interest into a career," Leschewski says. "I'm excited to

have a career where I can conduct food research that will hopefully have a positive impact on society."

The practical approach to economics is one that Elijah Kosse, Agricultural Economics Instructor, utilizes as well.

Kosse began teaching Principles of Microeconomics, Principles of Macroeconomics and Farm & Ranch Management earlier this fall. He will also teach Ag Marketing & Prices and Global Food Systems during the spring semester.

"My goal is to show students that economics isn't such an esoteric subject with no impact on their lives," Kosse says. "It's a way of thinking that's practical throughout their lives."

Kosse's interest in agriculture stems from a trip to the Congo, where he worked in the field and began learning about how agriculture differs in various parts of the world. The experience encouraged him to begin learning more about agriculture around the world, including the U.S.

"Teaching economics is what I'm truly passionate about," Kosse says. "Some people discover hobbies they really love, like rock climbing or kayaking. Reading about economics – and cooking – are my 'things'."

Kosse got his bachelor's in Economics and a master's in Applied Economics from the University of Idaho. He grew up as a Jackrabbit fan, as his father is originally from Brookings.

"It seemed like a good fit," he adds.

By Sarah Hill

New Local Foods Education Center Supports Student Learning

Outdoor classroom trains students to help feed a hungry world



FRESH. TASTY. LOCAL. Those attributes are what consumers are looking for when seeking produce. South Dakota State University responded to this quest by creating a Local Food Education Center on the Brookings campus.

“The major goal of the Local Foods Education Center (LFEC) is to educate our students and communities on a growing number of issues pertaining to local foods and production,” says Brett Owens, director of the center and one of the horticulture instructors in the SDSU Department of Agronomy, Horticulture and Plant Science. “An important topic is food security. Through education in the classroom and in the field, we want to teach students and the public how to best combat food insecurity in our communities through sound management practices,

new and diverse growing methods, and promotion and marketing.”

The grand opening and pumpkin rush for the outdoor learning space and a high tunnel building showcased the area in October 2017. Dedicated to student and public teaching and learning, it emphasizes hands-on field experience with small-scale food production and distribution practices. The LFEC includes a 1.2-acre outdoor classroom and is situated just off Medary Avenue on the northern edge of the SDSU campus.

“It is an outdoor classroom where students will have hands-on experiences all the way from planting to management and harvest, and there will be some activities for storage and distribution,” says David Wright, head of the Department of Agronomy, Horticulture and Plant Science at South Dakota State University.

Pictured: Students harvested and donated 3,500 pounds of produce during the first growing season at the Local Foods Education Center.

Local food production has become a core of the SDSU horticulture curriculum. Currently, SDSU does not offer a specialized degree in local foods. However, there is a unique and focused curriculum in the Horticulture program that culminates in a three-course Local Foods track (spring, summer and fall). The Local Foods curriculum contains education on everything from garden design to food safety.

PUBLIC INVITED TO EXPERIENCE

Owens explains, "As an educational facility, we promote new learning methodologies and growing systems. We welcome visitors to the Center with prior scheduling. There are a number of opportunities for the public to visit the LFEC during field days, special events or pre-scheduled tours."

Five faculty members from the Horticulture Department work to provide a balanced structure of both classroom and field coursework. With the addition of the high tunnel at the LFEC, the outdoor learning programs are extended to 9-10 months of the year. Growing continues 365 days a year through hydroponics, aquaponics and other innovative technologies.

"We experiment with and teach a variety of growing techniques, both traditional and experimental – rolling trellises, arched support framing, raised beds, hydroponics, aquaponics, etc." Owens says. "Crop-wise, we plant the major garden staples; tomatoes, cucumbers, squash, etc., but when a student has a particular interest they want to explore, we welcome that! We haven't grown purple carrots yet, but we did grow chocolate tomatoes this year and they were a hit!"

Because the interest in Local Foods is quite broad, students come from a diverse number of majors; including Horticulture, Diet and Nutrition, Engineering, etc.

Through technology, experts in the field can share their knowledge with classes. The students hosted an on-line event with Dr. Liz Carlisle from Stanford University who is the author of *Lentil Underground*. Equally as important, several local producers share

their knowledge and experience with the classes.

Produce grown at the LFEC is not sold but shared with the community. Owens relates, "We are an educational facility and are here to teach. We do not compete with local food producers."

He says, "During our first season, we were proud to work with local organizations such as The Harvest Table to provide fresh food donations from the LFEC. This year, we harvested and donated 3,500 pounds of produce! We look forward to expanding our donations to other groups in the coming season."

Owens continues, "We were surprised to learn the need for fresh foods is as high as it is. It is outstanding to be a part of providing a partial solution to the food insecurity problem of our community!"

STUDENT DRIVEN

Students and student workers are an integral part of the LFEC – from planning and managing to harvesting. Through classroom education to hands-on experience, they learn how to fully operate and manage a successful growing system.

Owens explains, "One of the most unique aspects of our program is allowing students and student workers the opportunity to experiment in their areas of interest. In addition to standard programming and education, it provides them the opportunity to spend part of their experience with the LFEC researching and developing their own project. For example, one student with a passion for sustainability and permaculture helped develop our composting system. Another designed and built the mini-hoop system we used for cool season crops."

One of the students with an engineering background designed and built a few seed spacers for the seeding equipment. He also created the hardware (through 3-D printing) used for the track hose system.

"We promote the experimentation and use of unique growing systems like our Cantaloupe Canopy!" Owens says. "The canopy was designed to support the natural trellising and weight distribution of the fruit to keep it off the garden floor. Not only did we see less disease and other ground contamination issues, we were able to manage production in a smaller amount of space."

Owens continues, "Our graduates have gone on to many great opportunities in the field. A few are successfully operating their own small-scale operations, others have followed in educational settings, botanic gardens, municipal horticulture programs, and of course graduate work."

HIGH TUNNELS EXTEND GROWING SEASON

Greenhouses have always had a presence on the SDSU campus. The difference between greenhouses and high tunnels is the availability of a heat source.

"Although greenhouses are a wonderful part of horticulture and growing, we wanted to showcase another sustainable model that falls more in line with consumer and producer demand," Owens says. "A high tunnel; with proper site location and directional placement, will help extend the producer's season by several months at a fraction of the greenhouse cost. Of course the growing season in a high tunnel will vary each year depending on environmental conditions, but typically in our area we can see high tunnel production from early March through late November. We also teach greenhouse production in the Local Foods program."

Future plans include building a commercial kitchen at the LFEC. It will be utilized for a variety of local foods type preparations; canning, fermentation, etc. Additionally, the LFEC would like to open it up for several community education events as well.

Pumpkins grown at the LFEC were shared at the grand opening and have a special spot in the heart of Owens.

"My favorite thing to grow is undoubtedly pumpkins!" Owens explains, "I have been growing them since childhood and certainly enjoy the interest and demand for our pumpkins on campus and in the community."

Committed to growing for the future, Owens concludes, "Sustainability is one of our core values. From converting an old granary into a wonderful learning space at LFEC to teaching students about managing soil health, being sustainable in our practices is so important."

By Connie Groop

DAIRY CLUB NAMED 2017

Ag-Bio Club of the Year

Full schedule provides networking opportunities for club members

The South Dakota State University Dairy Club was recognized for their accomplishments and involvement on campus by being named the 2017 College of Agriculture and Biological Sciences Club of the Year.

Every year, clubs in the College of Agriculture and Biological Sciences are invited to submit applications for the Club of the Year award. The applications, along with points earned for club involvement in various College of Agriculture and Biological Sciences events, are judged to determine the winner.

With 70 active members from 15 different majors, the Dairy Club is very diverse while still remaining industry specific. Their mission is to provide networking opportunities among club members and industry professionals while developing leaders within the industry. The 2017 club president was Cole Hoyer, senior Dairy Production major.

“Year in and year out, the Dairy Club is one of the most active student organizations at SDSU, and they do a great job of promoting the Dairy and Food Science Department,” said Don Marshall, Interim Dean of the College of Agriculture and Biological Sciences.

Club members organize a summer Dairy Camp for K-12 students, conduct tours of the dairy farm and processing plant, sell holiday cheese boxes as a fundraiser, and many volunteer their personal time to work at the South Dakota State Fair dairy bar.

In the past year, the Dairy Club’s main event and shining moment was hosting the 2017 Midwest Regional American Dairy Science Association Student Affiliate Division Conference. The conference attracted over 380 students to the SDSU campus from 11 universities. For hosting the event, the club also received the 2017 Outstanding Program in the SDSU Student Organization awards.

The SDSU Dairy Club is advised by five faculty members from the Dairy and Food Science Department: Dr. Jill Anderson, Assistant Professor; John Haberkorn, Manager of the SDSU Davis Dairy Plant; Peter Linke, Manager of the SDSU Dairy Research & Training Facility; Melissa Schmitt, Assistant Manager of the SDSU Dairy Research & Training Facility; and Dr. Sergio Martinez-Montegudo, Assistant Professor.

By Sydney Sleep

SDSU DAIRY CLUB CONTINUES SUCCESSFUL CHEESE BOX SALES TRADITION



The SDSU Dairy Club sold 7,500 pounds of cheese—more than 2,000 boxes—during the 2017 holiday season.

“The cheese is 100 percent SDSU,” says Cole Hoyer, a SDSU senior Dairy Production major and SDSU Dairy Club President, who co-chairs the Dairy Club Cheese Box Project with fellow student Angela Wick. “The cheese is made from milk produced on the SDSU Dairy Research & Training Facility, by SDSU students and Dairy Club members. The cheese is produced by SDSU students at the Davis Dairy Plant on campus, and is cut and packaged by SDSU students.”

Customers were able to choose four, one-pound blocks of cheese in each box. The Dairy Club offered a choice of 12 different types of cheese: mild cheddar, aged cheddar, bacon cheddar, smoked cheddar, white cheddar, co-jack, Monterey



Pictured: The members of the 2016-2017 SDSU Dairy Club (top) helped earn the Club of the Year honor. The 2017-2018 SDSU Dairy Club (bottom) continues the tradition offering strong dairy industry networking and community engagement opportunities for members.

jack, black pepper, BBO, Italian herb, jalapeno and Chipotle garlic. Boxes could be shipped anywhere in the U.S. and Canada with a holiday greeting.

"Last year, we sold out the Chipotle garlic right away, and a lot of the cheddars go very well," says Hoyer. "Co-jack and Italian herb are also very popular."

The SDSU Dairy Club has conducted cheese box sales, since the 1970s, and has seen a steady increase of sales over the past several years. The funds finance the Dairy Club's strenuous activity schedule, scholarships, trips to visit dairies across the U.S., and some funds are also donated to other organizations.

"Last year, we helped sponsor the SDSU Dairy Challenge team, which is made up of SDSU Dairy Club members," adds Hoyer. "We've also sponsored the SDSU Dairy

Cattle Judging team to help pay for their transportation."

Orchestrating a project of this level takes a lot of planning and organization. The process begins in January each year, according to Hoyer.

"Based on the previous year's sales, the co-chairs determine which cheeses sold the best," he says. "From there, we decide which cheeses need to be produced and how much of each and put in the order with the Davis Dairy Plant."

In September, SDSU Dairy Club members volunteer their time two nights a week for two hours to help cut the cheese in preparation for the boxes – a task that lasts until Thanksgiving. Each time the club members work, they receive "Dairy Bucks" that can be spent on SDSU Dairy Club apparel or put toward their costs for club trips.

The process really ramps up in October. The co-chairs make sure the order forms are ready to go, determine pricing and go over the inventory of boxes and stickers. Order forms are made available in mid-October through various means.

Orders begin coming in around November 1, and SDSU Dairy Club members are busy fulfilling orders, which are mailed from after Thanksgiving until the week prior to Christmas.

To learn more about cheese box sales for next year, contact 2018 Club president, Abigail Hopp at abigail.hopp@jacks.sdstate.edu, or call 605-688-4116. To purchase SDSU cheese during the off-season, contact Davis Dairy Plant Manager John Haberkorn at john.haberkorn@sdstate.edu or 605-688-5480.

By Sarah Hill



Jill Anderson Receives College of Agriculture and Biological Sciences Teacher of the Year Award

Teacher shares contagious passion and enthusiasm for learning

EACH YEAR STUDENTS IN THE COLLEGE OF Agriculture and Biological Sciences nominate professors, advisors and mentors who they feel go above and beyond their duties, are dedicated to excellence and provide unwavering support for students. The nominees are evaluated by a panel of student representatives including Students' Association Senators and Ag-Bio Prexy Council officers.

Dr. Jill Anderson was chosen as the 2016-2017 College of Agriculture and Biological Sciences Teacher of the Year. Anderson is an assistant professor in the Dairy and Food Science Department and has been a faculty member at SDSU since 2012. In addition to being an outstanding teacher, Dr. Anderson is an advisor to the Dairy Club and coaches the Dairy Cattle Judging Team.

After completing her undergraduate work in Animal Science at the University of Delaware in Newark, she came to SDSU for graduate work. She completed her master's in Dairy Production in 2005 and her Ph.D. in Dairy Production in 2012.

Anderson was then appointed Assistant Professor in Dairy Science. In this role, she teaches several dairy courses, advises the SDSU Dairy Club, coaches the SDSU Dairy Judging Team, and conducts research. Her research evaluates different feeding strategies and alternative feed ingredients for dairy heifers to help producers understand feeding options while improving heifer performance.

"Dr. Jill Anderson is a highly effective educator, outstanding scientist and a great choice for the Ag-Bio Teacher of the Year award," said Donald Marshall, Interim Dean of the College of Agriculture and Biological Sciences. "Students appreciate her passion and dedication to their learning and preparation for professional success."

By Sydney Sleep

SDSU Dairy Judging Team Places Third in 2017 World Dairy Expo Intercollegiate Dairy Cattle Judging Contest

Kirby Krogstad claims high individual honors

THE SDSU DAIRY CATTLE JUDGING TEAM PLACED third in the Intercollegiate Dairy Cattle Judging Contest held during the 2017 World Dairy Expo in Madison, Wis.

Team members include Kristin Erf, a senior Dairy Manufacturing major from Oakdale, Minn.; Cole Hoyer, a senior Dairy Production major from West Salem, Wis.; Kirby Krogstad, senior Dairy Production major from Baltic, S.D.; and Andrew Socha, a senior Agricultural Engineering major from Rogers, Minn. The team is coached by Dr. Jill Anderson and Assistant Coach Michaela Della.

"The Dairy Cattle Judging team's success is due to the quality of the students and coaches," says Dr. Vikram Mistry, SDSU Dairy & Food Science Department Head. "Their placing is just outstanding—it's an incredible performance by the team."

Krogstad placed first as high individual for the overall contest. The team also received first place team status for the classes showcasing Jerseys and Ayrshires; third place team for Holsteins; and fourth place team for Red & White Holsteins. Erf placed as first high individual for the Jersey classes. The team placed 12 classes during the contest and gave oral reasons for six of those classes.

"As a team, they really bonded together and helped each other improve," says SDSU Dairy Cattle Judging Team Coach Dr. Jill Anderson. "Having that teamwork among the four individuals really helped the team as a whole to excel."

SDSU competed against 17 other teams during the contest. SDSU has sent students to compete in the World Dairy Expo Intercollegiate Dairy Cattle Judging Contest for at least 35 years. Mistry adds that the last time SDSU placed so high was more than 25 years ago. SDSU judging teams for cattle and products have competed nationally since 1916.

By Sarah Hill

Pictured: 2017 SDSU Dairy Cattle Judging Team members include, from left, Michaela Della (Assistant Coach), Kristin Erf, Cole Hoyer, Kirby Krogstad, Andrew Socha, Jill Anderson (Coach).





Three Jackrabbits Win National Dairy Promotion and Research Board Scholarships

Kirby Krogstad, Audrey Souza and Jacob Web earn national honors

THREE SOUTH DAKOTA STATE UNIVERSITY students have been recognized for their achievements by being awarded scholarships from the National Dairy Promotion & Research Board. State had the most recipients of any university receiving scholarships.

Kirby Krogstad, Baltic, Audrey Souza, Milbank, and Jacob Weg, Worthington, Minn., each receive a \$2,500 scholarship from the NDPRB through Dairy Management Inc.

"The recognition for these students speaks to the quality and experience they bring with them when they come to SDSU," said Vikram Mistry, Dairy and Food Science Department Head. "They are committed to dairy and the industry's future. These are accomplished students and young professionals on their way to being leading contributors in the dairy industry."

The annual scholarships are given to sophomore, junior or senior students enrolled in collegiate programs that emphasize dairy, including communications, marketing, business, economics, nutrition, food science and agricultural education.

Scholarships are awarded based on academic achievement, interest in a dairy career and demonstrated leadership, initiative and integrity. Candidates complete an application, submit their college transcript and write a short statement describing their career aspirations, dairy-related activities and work experiences.

By Sarah Hill

Pictured: Top left, Audrey Souza; bottom left, Kirby Krogstad; above, Jacob Weg.

SDSU Students Awarded National Dairy Shrine Scholarships

Kristin Erf and Abby Hopp shine in dairy industry spotlight

TWO SOUTH DAKOTA STATE UNIVERSITY (SDSU) students were recently recognized by the National Dairy Shrine for their outstanding accomplishments.

"These students have aspirations to work in the dairy industry in the future," says Dr. Vikram Mistry, SDSU Dairy & Food Science Department Head. "They have an excellent academic record and are already well on their way to becoming future leaders in the dairy industry."

Kristin Erf, a senior Dairy Manufacturing major from Oakdale, Minn. has received the National Dairy Shrine/Dairy Management, Inc. Milk & Dairy Product Scholarship. The scholarship is for students who intend to pursue careers in the fluid milk or dairy products industry. Kristin has been a leader in the SDSU Dairy Club, serving as Secretary. She has also been active in 4-H and



FFA. She is on the university swimming team as well. Kristin plans a career in dairy product manufacturing

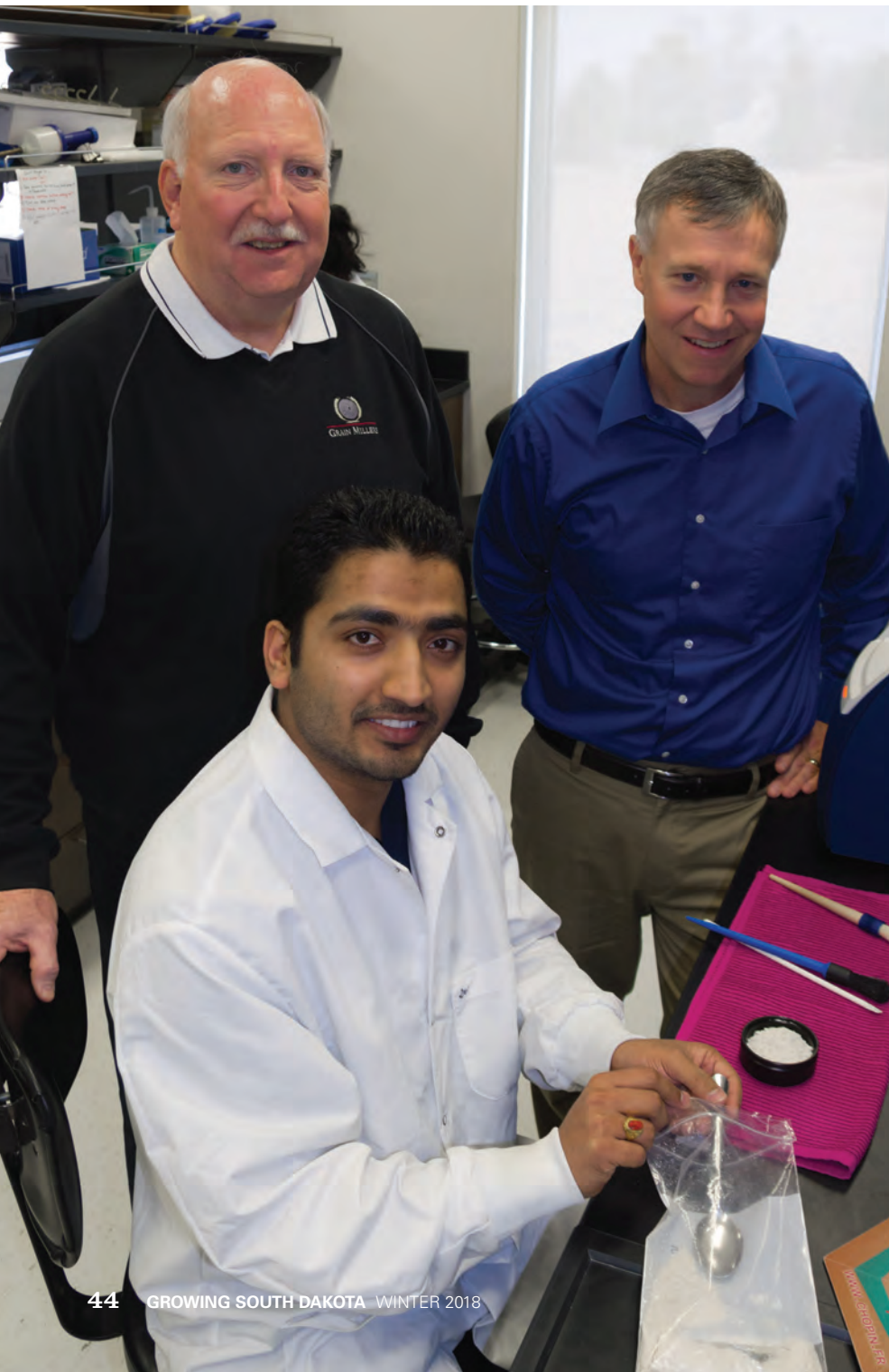
Abby Hopp, a sophomore Dairy Production major from Chatfield, Minn., has received the National Dairy Shrine Maurice E. Core Scholarship. The scholarship is awarded to students majoring in a dairy/animal industry related field with interest in working in the dairy industry in the future. Abby has been very active in 4-H, FFA, concert band and has served as the Fillmore County Dairy Princess. At SDSU she has served as the Dairy Club historian, is the Dairy Digest Editor, is part of the collegiate Jazz Band and the Collegiate Farm Bureau. Abby would like to have a career in the public relations or marketing industry focusing on dairy.

By Sarah Hill

Pictured: Kristin Erf (left) and Abby Hopp were honored at the 2017 National Dairy Shrine banquet.

FOOD SCIENTISTS PARTNER WITH FOOD INDUSTRY TO MEASURE **BETA-GLUCAN** **CONTENT IN OATS**

Padu Krisnan uses near-infrared spectrometer calibration to quantify beta glucan content



WHEN IT COMES TO THE cholesterol-lowering power of oats, it's the beta glucan that matters. That's why General Mills and Grain Millers joined forces to support research at South Dakota State University to determine beta-glucan levels in oats.

The two companies funded food science professor Padu Krishnan's proposal, providing \$140,000 to develop a near-infrared spectrometer (NIRS) calibration to quantify beta glucan content in oat samples.

A food product must contain at least 0.75 gram of beta-glucan soluble fiber from whole oats per serving to use the "heart healthy" label, according to the Food and Drug Administration. A one-cup serving of Cheerios contains 1 gram, as does a small bowl of hot oatmeal.

However, insuring that an oat product meets the .75 gram target is a challenge the industry has struggled with for 20 years. Until Krishnan's proposal, there has not been a quick, accurate test for measuring beta glucan, explains General Mills research agronomist Tom Rabaey (B.S. Agronomy/Plant Science '91), "Beta glucan is difficult to measure."

QUANTIFYING BETA GLUCAN

Krishnan's research uses near-infrared spectrometry to quantify beta-glucan levels in a sample of ground, dehulled oats.

The nutrients in grain absorb and reflect near-infrared energy. This energy creates a unique spectra, much like a fingerprint, explains Krishnan. Known values of beta glucan from chemical analyses are correlated with the spectral files.

Calibrations essentially train the software to quantify the reflective values for beta-glucan, according to Krishnan. "To get a good correlation, we needed a wide range



Pictured opposite page: SDSU food science graduate student Devendra Paudel, front, prepares a sample of dehulled, ground oats to show Bruce Roskens, director of crop research at Grain Millers Inc., left, and Tom Rabaey, research agronomist at General Mills how he uses near-infrared spectrometry to determine beta-glucan content. The research is supported by funding from both companies.

Pictured left: SDSU cereal chemist Padu Krishnan, a professor in the Department of Dairy and Food Sciences, and graduate student Devendra Paudel discuss using a wide variety of oats, thanks to the support of General Mills and Grain Millers, Inc., to develop a robust near-infrared spectrometer calibration to detect beta-glucan.

“In the last couple of years, we’ve rediscovered SDSU and we’re excited about the opportunities here.” – Tom Rabaey, research agronomist at General Mills

of oats grown in multiple locations, a very diverse population,” Krishnan explains. “From high to low beta-glucan levels, the NIR results must accurately compare with the wet chemistry.” A wide range allows for a better linear relationship between NIRS values and true values.

Aiding Krishnan in this research is master’s student, Devendra Paudel. Paudel analyzed nearly 500 reference samples. A validation sample set made up of several hundred independent samples is used to determine how close the NIRS-predicted values are to the true values.

To ensure variety, in addition to oat samples from South Dakota breeding lines, the researchers analyzed varieties from Iowa, North Dakota, Minnesota, Illinois and Washington, thanks to Rabaey and another SDSU alumnus, Bruce Roskens, (B.S. Agronomy/Crop Science ‘75) director of crop sciences at Grain Millers Inc.

“That’s part of the benefit of industry involvement – our supply chain is focused on North America and we get to see various practices,” Rabaey says. “That variety in genetic background is what makes this calibration more valuable,” adds Roskens.

Krishnan’s research team also scanned samples from multiple years because the growing conditions also affect the characteristics of the grain. “We have a very robust calibration – and it takes less than a minute to scan a sample,” says Krishnan. The next step will be to test the calibration on dehulled, unground oat groats.

GIVING SCIENTISTS, BREEDERS NEW TOOL

The near-infrared calibration can now be used, not only by General Mills and Grain Millers, but by oat breeders, including SDSU’s Melanie Caffé-Treml, to screen germplasm early in the breeding process.

“We want to make this calibration available to others,” emphasizes Rabaey. Having the ability to identify high beta glucan varieties early in the breeding process prevents oat lines from being developed that will not meet milling requirements, he explains, “It is a way for Melanie to direct her breeding program to develop the best agronomic traits and the best milling traits – it’s a win for producers and the milling companies.”

Caffé-Treml has been collaborating with General Mills oat breeder Paul Richter since the summer of 2016 when the company moved its oat research laboratory to Brookings. In addition, Krishnan and Caffé-Treml are part of a U.S. Department of Agriculture project to improve the nutritional and milling qualities of new oat varieties.

“Oat varieties need to be both low in fat and high in beta glucan,” Krishnan notes. The researchers can measure beta glucan, fat and protein using the near-infrared spectrometer.

“A single platform to measure multiple constituents simultaneously and within seconds – that is powerful information for the breeder and the food processor,” Krishnan states.

“We’re fortunate to have Padu here working with Melanie,” Rabaey says, noting that the number of oat breeders as well as oats production has decreased.

Rabaey notes in the 1990s, the oats in food products came from the United States. Now 90 percent of the oats Americans consume come from Canada. However, according to Rabaey, the Canadian oat crop has a shorter growing season and tends to be lower in beta glucan and protein.

“Breeders have so many objectives – yield, disease resistance, standability,” Roskens says. Using this near-infrared measurement, breeders can test lines at the F3 or F4 stage, before it goes to the field.

“We know South Dakota has very good agronomics in its oat lines,” continues Roskens. As producers start to diversify their crop rotations, Rabaey says, “oats is getting more attention than it has in quite some time.” Roskens points to oats as being beneficial to the soil and a means to break disease cycles.

“In the last couple of years, we’ve rediscovered SDSU and we’re excited about the opportunities here,” Rabaey says. “As the demand for high-quality food grade oats continues to grow, we see increasing need for multiple sourcing areas that includes the Dakotas.”

By Christie Delfanian

J. Walters McCarty Academic Advising Awards Go to Outstanding Advisors

Kayte Haggerty and Cody Wright have been recognized for being outstanding advisors in the College of Agriculture and Biological Sciences by receiving the 2017 J. Walters McCarty Award for Academic Advising.

“Kayte Haggerty and Dr. Cody Wright are outstanding examples of what the McCarty Award for Excellence in Academic Advising is intended to recognize,” said Interim Dean of the College of Ag & Bio, Don Marshall. “Both individuals are well known as being strong advocates for students, by helping them achieve academic success and personal development, while also preparing students for successful professional careers.”

Haggerty is a professional advisor in the Department of Economics. She advises a large number of students each year, along with teaching a course and overseeing the department’s student clubs.

“Without Kayte’s capability, energy and dedication, the department would not have the support in place for students that now exists to help them seek greater accomplishments and reach for higher achievements,” said Economics Department



Pictured: Dr. Cody Wright (left) and Kayte Haggerty (right) received the Walt McCarty Academic Advising Award from Interim Dean Don Marshall.

Head Eluned Jones. “She is an amazing role model for our student leaders.”

Wright is one of the most-requested advisors in the Animal Science Program. He also teaches several courses and serves as an advisor to the Block & Bridle Club and FarmHouse Fraternity.

“Dr. Wright relates well to students who look to him for not only academic advising, but mentoring as well,” said Animal Science Department Head Joe Cassady. “Excellence in academic advising should extend beyond assisting students with selection of classes.”

SDSU College of Agriculture and Biological Sciences alumnus, David Anderson, established the J. Walters McCarty Award for Academic Advising

as a tribute to his former academic advisor, J. Walters McCarty. McCarty was a professor of Animal and Range Sciences at SDSU from 1948 to 1986.

Anderson greatly values his SDSU education and guidance from his advisor, “Walt” McCarty, and therefore established this award to recognize and promote excellence in academic advising in the College. The McCarty endowment also supports professional development workshops for the enhancement of academic advising at SDSU.



Glenn Muller Receives South Dakota State University Friend of the Department of Animal Science Award

Glenn Muller, Executive Director of the South Dakota Pork Producer’s Council (SDPPC), was recently recognized with the South Dakota State University (SDSU) Friend of the Department of Animal Science

Award during the Department’s scholarship and awards banquet.

Muller is a SDSU graduate with a degree in Agricultural Education. He has also served as a judge of the Little International swine competition.

Pictured: Glenn Muller, Executive Director of the South Dakota Pork Producer’s Council, left, is presented with the SDSU Friend of the Department of Animal Science Award by Dr. Joe Cassady, SDSU animal Science Department Head.

South Dakota Company Donates New Roller Mill to SDSU Feed Processing Facility

Lone Star Enterprises, Lennox, S.D., donated a new Triple Lone Star roller mill to the South Dakota State University (SDSU) feed processing facility. More than 1,250 tons of feed are produced annually for the university's livestock teaching and research facilities for beef, dairy, equine, sheep and swine. This equipment upgrade replaces two machines. The new roller mill will allow feed to be milled at a higher quality and consistency, so livestock will achieve increased feed utilization. The SDSU feed processing facility employs SDSU students to assist with processing and packaging feed for the various educational and research units. Lone Star Enterprises is a family owned and operated company based in Lennox, S.D., with 13 employees. For more information, visit www.sdstate.edu/animal-science or www.lonestarenterprises.com.



Farm Credit Services of America Donates to SDSU Precision Agriculture Building Project

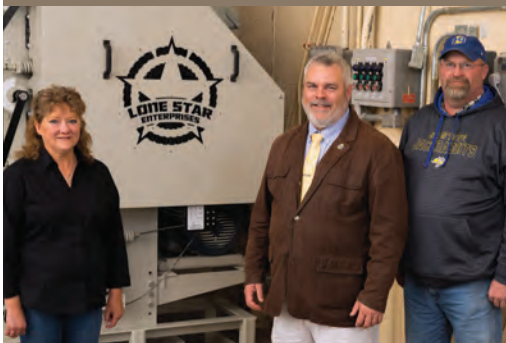
South Dakota State University received a \$500,000 gift from Farm Credit Services of America to support a Precision Agriculture Facility on the SDSU campus. The hub for research, teaching and innovation will cover the whole spectrum of precision agriculture and will enable collaboration with differing disciplines.

Interim Dean of the College of Agriculture and Biological Sciences, Don Marshall, states, "SDSU is extremely grateful to Farm Credit Services of America for their support of the Precision Ag project at this substantial level." The gift will position SDSU students and researchers to address the grand challenges of global

food security with technology and efficient production methods that sustain our natural resources for future generations.

Efficient practices that maximize production and profits are important to the future of the ag industry. Bob Schmidt, Senior Vice President for FCSAmerica in South Dakota noted, "Graduates from this program will be ready to meet the technology and expertise needs of employers in agronomy, equipment and more. Producers will have additional support in applying precision ag to their operations because of the work that will be done in this facility."

Pictured above: Bob Schmidt, Senior Vice President for FCSAmerica in South Dakota, second from right, presents a \$500,000 gift in support of the SDSU Precision Agriculture Facility to SDSU President Barry Dunn, second from left, Bill Gibbons, Interim Director of the South Dakota Agricultural Experiment Station, left, and Interim Dean of the College of Agriculture and Biological Sciences Don Marshall, right. **Pictured left:** Brenda Bakken, CEO, Lone Star Enterprises, left, stands near the Triple Lone Star roller mill that the company recently donated to SDSU. Bakken is joined by Dr. Joseph Cassady, SDSU Animal Science Department Head, and John Goebel, SDSU feed processing facility manager.



Muller served as President of the SDPPC in the early 1990s. He was instrumental in accommodating SDSU judging teams and welcomed SDSU Animal Science classes both for educational opportunities and tours at John Morrell. He also instigated a program to provide \$2,000 annually to the SDSU Livestock Judging Team and SDSU Swine Club.

"Muller has been a tremendous leader for all of agriculture," says Joe Cassady, SDSU Animal Science Department Head.

Cassady says, "Many of the donors' gifts to the Swine Education and Research Facility project were a direct result of Muller's hard work. With his leadership, the SDPPC voted to provide \$25,000 for a Master's Degree assistantship to support an assistant manager at the new facility. The assistant manager position is critical to successful operation of the facility."

Muller was one of four leaders who worked diligently to obtain funding for renovation of the South Dakota Animal

Disease Research and Diagnostic Laboratory (ADRDL).

"It was Muller's contacts and the respect people have for him as a leader that helped propel the approval for the renovation," Cassady notes. Muller served as a speaker for the ADRDL groundbreaking on August 31.



First Bank & Trust Makes Leadership Gift to SDSU Precision Agriculture Building

First Bank & Trust, headquartered in Brookings, announced a \$500,000 investment to help South Dakota State University with construction of the Precision Agriculture facility on campus. The facility will be a center for research, teaching and innovation that covers the entire spectrum of precision agriculture. SDSU President Barry H. Dunn said the company is among SDSU's longest and most-generous corporate partners. SDSU is the nation's first land-grant university to offer a bachelor's degree in Precision

Agriculture. The degree encompasses the Agricultural and Biosystems Engineering Department, Agronomy, Horticulture and Plant Science Department and College of Engineering. The new degree will give students access to the cutting-edge developments in the rapidly evolving intersection of agronomics, high-speed sensor technology, data management and advanced machinery development. First Bank & Trust supports the facility which will be a catalyst for ag industry innovation as part of the ag economy of the future.

Pictured: SDSU President Barry H. Dunn (left), and College of Agriculture and Biological Sciences Interim Dean Don Marshall joined Van. Fishback, Chairman, Fishback Financial Corporation, and Kevin Tetzlaff, President of First Bank & Trust (center) to accept the gift along with SDSU Agriculture and Biosystems Engineering Department Head Van Kelley, South Dakota Agricultural Experiment Station Interim Director Bill Gibbons, and SDSU Agronomy, Horticulture and Plant Science Department Head David Wright.

Sharon Clay Receives Gamma Sigma Delta Award

Dr. Sharon Clay, Distinguished Professor in the Department of Agronomy, Horticulture and Plant Science was recently awarded the 2017 Gamma Sigma Delta International Distinguished Achievement in Agriculture Award. Clay has enjoyed an impressive career in weed science at SDSU and has received numerous teaching, research and service awards both at SDSU and from professional societies. Clay, center, is pictured with, from left, SDSU President Barry H. Dunn, Interim Dean of the College of Agriculture and Biological Sciences Don Marshall, Mike Brugger, Secretary and President Elect Gamma Sigma Delta International, and Agronomy, Horticulture and Plant Science Department Head David Wright.



Howard Hillman Named South Dakota State University Distinguished Animal Science Alumni

The South Dakota State University (SDSU) Department of Animal Science recently announced that Howard Hillman, Sioux Falls, SD, was selected as the 2017 SDSU Distinguished Department of Animal Science Alumni Award recipient.

"The Department of Animal Science is proud to recognize Mr. Hillman with this award for his contributions to the beef cattle industry," says Joe Cassady, SDSU Animal Science Department Head. "Howard Hillman first distinguished himself as a member of the 1962 SDSU National

Pictured: JoAnne (left) and Howard Hillman (center) accept the 2017 South Dakota State University Distinguished Department of Animal Science Alumni Award from Dr. Joe Cassady, SDSU Animal Science Department Head.



Team Takes Second in National Tractor Design Competition

Fifteen students from the South Dakota State University Agricultural and Biosystems Engineering Department succeeded in earning second place overall in the International Quarter-Scale Tractor Student Design Competition, held in Peoria, IL. The students majoring in agricultural and biosystems engineering and agricultural systems technology embraced the challenge to take a 31-hp engine and a set of tires to build a tractor, one-fourth the normal size. This was the highest placing for SDSU in the 15-year history of attending. In the past, the highest SDSU ranking was eighth

overall. The competition is sponsored by the American Society of Agricultural and Biological Engineers.

SDSU's group competed with two garden-sized tractors in the A and X class. As part of this competition, students from across the world are challenged to harness the power of a specified stock engine in order to maximize performance during the tractor pulls with a manufactural and cost-effective design. The event forces students to learn time management and manufacturing processes, and many other practical skills folks in industry are looking for.

Pictured: Members of the SDSU Quarter-Scale Tractor Team claimed second place at the recent International Quarter-Scale Tractor Student Design Competition in Peoria, IL. Team members and advisors include, from left to right: Nate Wright, Ryan VanTassel, Tia Muller, Miranda LeBrun, Mitch Sandey, Alex Koepke, T.J. Harder, Chandler Jansen, Lucas Derald, Joe Deboer, Caleb Dinse, Spencer Van Overbeke, Doug Prairie, Tate Ketelhut, Joe Darrington, and Brady Buck. Not pictured: advisor Aaron Franzen. (Photo courtesy of the American Society of Agricultural and Biological Engineers).

Champion Livestock Judging Team and went on to even greater success as a producer of superior Angus genetics.”

Hillman received his Animal Science degree in 1963 and became a managing partner of his family's diversified operation, BonView Farms, near Canova, SD. The BonView name became synonymous with high-quality Angus cattle. Hillman maintained a world-renowned seedstock operation, producing Angus genetics that have influenced Angus cattle's international value. Numerous BonView-produced sires have headlined AI studs, including sires

that rank in the top high-usage bulls of all time. BonView Farms was an early adopter and advocate for using performance data to characterize Angus genetics, focusing on improving economically relevant traits. The herd dispersed in 1999.

Hillman was also a volunteer and leader in the American Angus Association (AAA) and Angus Foundation, serving as President and on the Certified Angus Beef® (CAB) Board of Directors. Hillman has been inducted into the Angus Heritage Foundation.

Craig Dybedahl Named 2017 South Dakota State University Friend of the Beef Industry



Craig Dybedahl, Colton, SD, was named the 2017 South Dakota State University (SDSU) Friend of the Beef Industry. Craig is a 1981 graduate of South Dakota State University, with a degree in Agricultural Education.

For the past 30 years, he has worked in sales for Zoetis.

“Craig's dedication to the South Dakota beef industry, SDSU, the College of Agriculture and Biological Sciences, and agriculture in general is unquestioned,” says Joe Cassady, SDSU Animal Science Department Head.

Dybedahl dedicated significant time and effort supporting fundraising for the new SDSU Cow Calf Education and Research Unit. His efforts encouraged many individuals and organizations to contribute to the effort.

Dybedahl currently serves on the SDSU College of Agriculture and Biological Sciences advisory committee. In addition, he is very engaged with the SDSU Animal Science Department, giving his time and expertise to both the department and students.

“Craig has invested his entire career and time as a volunteer in activities which better enable the success of beef producers in South Dakota,” Cassady says. “He remains a strong advocate for education and leadership development for individuals in all segments of the beef industry.”

Dybedahl was honored on the field during the 2017 SDSU Beef Bowl Football game.



SDSU Graduates Say Hometown Provides Support to Raise Family, Build Careers & Cattle Herd

MORNINGS ON THE KNOCK FARM CAN BE A BIT chaotic. While Eric is feeding cattle, Roxanne makes sure teeth are brushed and hair is combed. Around 7:30 the family parts ways. Eric heads to his first appointment as veterinarian and partner at Prairie View Veterinary Clinic and Roxanne loads Rylee, 8; RaeAnna, 6; Rielle, 3 and Roy, 1 into the pickup and they are on their way to Tulare Day Care.

“The kids spend their weekdays playing with their cousins and neighbors. One of the reasons we returned to Tulare is we wanted our own cattle herd and we wanted to raise our kids near family,” says Roxanne (Wagner) Knock, ’03 Animal Science graduate and staff nutritionist for Dakotaland Feeds, a regional feed company which is jointly owned by Purina, South Dakota Wheat Growers and North Central Farmers Elevator.

“Neither one of our jobs are 8-to-5-and-done type of job. As a vet, Eric is on call seven-days a week and I end up being on

the road about 40 nights a year – so we couldn’t do this without being close to our family,” she adds.

Roxanne, 36, grew up near Tulare on a diversified crop and livestock operation. A fourth-generation producer, she showed registered Hereford cattle in 4-H and FFA. “I spent a lot of my time caring for cattle. When my dad and brother went to the field, I would do the cattle chores and join them later in the day.”

It was her passion for cattle that led her to turn athletic scholarships down in favor of pursuing an Animal Science degree at South Dakota State University.

“Different colleges approached me about playing basketball or track, but they didn’t have an Animal Science program,” explains Roxanne.

Although she knew she wanted to remain involved in the livestock industry, Roxanne says it wasn’t until Meat Science Professor Duane Wulf asked her to join the South Dakota State

University Meats Judging Team that she began to figure out her career focus.

“To have someone I respected tell me, ‘I think you should really do this,’ that was a turning point for me,” she says.

Traveling the U.S. with the collegiate meats judging team, Roxanne learned about the livestock industry beyond South Dakota’s borders. It is also where she got to know her husband, fellow Animal Science major, Eric Knock.

“Meats judging, we spent a lot of time locked in a van as a team, traveling from Brookings to Ft. Worth or Amarillo for contests – you get to know people,” she explains.

The couple had a lot in common. Beyond their involvement in SDSU extracurriculars – they were both involved in Block and Bridle and Little International – like Roxanne, Eric, 36, also grew up on diversified crop and livestock operation.

“I always felt like working with cattle was what I was supposed to do – especially during calving season. There is something about seeing the breeding decisions I made last year pan out,” says the Willow Lake native and fifth-generation livestock producer. “But I also knew it wasn’t going to work for me to immediately come back to my family’s farm. With 4-H and FFA, I had been on campus several times and knew people who had gone to SDSU, so I felt like it was a good fit for what I wanted to do.”

His experience on the collegiate meats judging team has served him well as a veterinarian.

“Writing reasons as a meats judge increased my confidence and decision-making skills. As a veterinarian, I have to decide

in a matter of seconds what to do that will make a difference in whether an animal will live or not. And, I can’t wait to make these decisions – or call a bunch of people to help me make the decision – because there are often four other emergencies waiting on me.”

Eric also credits his on-campus work study jobs at the SDSU Cow Calf Education and Research Facility and South Dakota Animal Disease Research and Diagnostic Laboratory with preparing him for vet school and beyond.

“They were as helpful to me as classes were, actually. I learned a lot in class but through these jobs, I gained practical application,” Eric says. “Working in the Cow/Calf Unit I saw a different way of doing things than what I learned growing up on my farm.”

He explains that the understanding that there is no one-size-fits-all solution is invaluable in his work today as a large and small animal veterinarian.

“Everyone’s resources are different,” he explains. “Blanket recommendations often do not work for livestock producers.”

Following graduation from SDSU, Eric went on to Iowa State University School of Veterinary Medicine. Roxanne pursued a master’s degree in Meat Science at Kansas State University and eventually received her doctorate in Ruminant Nutrition from Iowa State University. “I was working on research geared toward meat processing and I didn’t enjoy it very much. That’s when I realized I needed to get back to working with live animals,” she says.



RETURNING HOME

In her position with Dakotaland Feeds, Roxanne develops feed formulas for the feed mill and provides technical leadership to field staff, troubleshooting producer issues. She is also responsible for producer communications. “I ensure that we provide livestock producers with quality feed to meet their cattle’s nutrient needs.”

Actively involved in her state and community, Roxanne serves on the South Dakota Ag and Rural Leadership board, the South Dakota Cattlemen’s Foundation board, the Tulare Daycare board, SDSU College of Agriculture and Biological Sciences Advisory Board and she is a Sunday School teacher at Tulare United Church. She is also a member of the American Society of Animal Science. Eric serves on the South Dakota Veterinary Medical Association Continuing Education committee, has served on the Hand County Livestock and Crop Improvement Association board and the Tulare United Church board. He is also a Sunday School teacher and is a member of the South Dakota Veterinary Medical Association, American Veterinary Medical Association and the Academy of Veterinary Consultants.

Together the couple has expanded the cattle herds they started in high school and run a cow/calf-to-finish operation. “We couldn’t do what we are doing if we did not have the support of our family and neighbors who help us care for our children, lease us pastureland and help us feed cattle in the winter,” Eric says. “This is home.”

By Lura Roti

Editorial Note: Returning Home is a series designed to highlight South Dakota State University graduates of the College of Agriculture and Biological Sciences who return home to build their career. If you know of a graduate who should be included, please e-mail their name, contact information and a bit about them to Lora Berg, Director of Marketing and Communications for the College of Agriculture and Biological Sciences, lora.berg@sdstate.edu.





A Simple Lesson

I recently had a meeting with one of my campus partners about a new scholarship that was being endowed in his honor by a generous donor.

It was an emotional moment for him when he heard about their gift and their intentions. This intelligent, articulate gentleman was quite speechless. We discussed the fact that he must have had a tremendous impact on this person for them to show their appreciation in this way.

As we worked through the paperwork to start the new scholarship, I asked whether he had ever had anyone in his life who had done the same for him. "Oh yes," he said, "my fourth-grade teacher, Mrs. Smith, she changed my life."

My follow up question: "How"? I expected a story about a strong, dynamic instructor who challenged him and pushed him to be his best and to aspire to greatness, to change the world. I was picturing something straight out of "Mr. Holland's Opus" or "Dead Poet's Society." His response left me speechless. "She acknowledged my existence," he said.

He went on to describe a childhood that involved many siblings, challenging circumstances and an inherent tendency to be extremely introverted and shy. He explained that Mrs. Smith would look at him – not glance at him – but truly look at him when she spoke. She would smile and compliment him whenever she had the chance, not only in private, but in front of others, too.

"She made me realize that I had value. That amongst all the chaos of life, I mattered." This man, well into his 50s and holds a bachelor's, masters, and Ph.D., who is admired and respected throughout campus, needed simply to know that "he mattered."

I've learned many lessons in my life through what I would consider subtle, yet profound moments. However, none of those lessons were more moving, yet so simple as this one. "She acknowledged my existence."

Amazing the impact we can have on each other. How we treat each other matters.

MIKE BARBER '97



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March 23rd - 24th

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Events start at 5 p.m. on Friday, March 23rd.

Calling all Little "I" alumni! There will be an alumni social on Saturday, March 24th from 3-4:30 p.m. in the Ag Heritage Museum.

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